

UNINTERRUPTIBLE POWER SUPPLY



SLC **ADAPT** series

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1. Introduction

1.1. Gratefulness letter

We would like to thank you in advance for the trust you have placed in us by purchasing this product. Read this instruction manual carefully before starting up the equipment and keep it for any possible future consult that can arise.

We remain at your entire disposal for any further information or any query you should wish to make.

Yours sincerely,

SALICRU

- ☐ The equipment here described can cause important physical damages due to wrong handling. This is why, the installation, maintenance and/or fixing of the here described equipment must be done by our staff or specifically authorised.
- ☐ According to our policy of constant evolution, we reserve the right to modify the specifications in part or in whole without forewarning.
- ☐ All reproduction or third party concession of this manual is prohibited without the previous written authorization of our firm.

1.2. Using this manual

The target of this manual is to give explanations and procedures for the installation and operating of the equipment. This manual has to be read carefully before installing and operating it. Keep this manual for future consults.

This equipment has to be **installed by qualified staff** and, the simple help of this manual, **it can usable by personnel without specific training**.

1.2.1. Used conventions and symbols



«Warning» symbol. Carefully read the indicated paragraph and take the stated prevention measures.



«Danger of electrical discharge» symbol. Pay special attention to it, both in the indication on the equipment and in the paragraph referred to this user's manual.



«Main protective earthing terminal» symbol. Connect the earth cable coming from the installation to this terminal.



«Earth bonding terminal» symbol. Connect the earth cable from the loads or battery cabinet to this terminal.



«Notes of information» symbol. Additional topics that complement the basic procedures.



Preservation of the environment: The presence of this symbol in the product or in their associated documentation states that, when its useful life is expired, it will not be disposed together with the domestic residuals. In order to avoid possible damages to the environment, separate this product from other residuals and recycle it suitably. The users can contact with their provider or with the pertinent local authorities to be informed on how and where they can take the product to be recycled and/or disposed correctly.

1.2.2. For more information and/or help

For more information and/or help of the version of your specific unit, request it to our Service and Technical Support (S.T.S.).

1.2.3. Safety and first aid

Together with the equipment and this «User and installation manual», it is provided the information regarding to «Safety instructions» (See document EK266*08). Before proceeding to the installation or commissioning, check that **both information** are available; otherwise request them. It is obligatory the compliance of the «Safety instructions», being the user the legal responsible regarding to its observance. Once read, keep them for future consults that can arise.

2. Quality and standard guarantee

2.1. Management declaration

Our target is the client's satisfaction, therefore this Management has decided to establish a Quality and Environmental policy, by means of installation a Quality and Environmental Management System that becomes us capable to comply the requirements demanded by the standard **ISO 9001** and **ISO 14001** and by our Clients and concerned parts too.

Likewise, the enterprise Management is committed with the development and improvement of the Quality and Environmental Management System, through:

- The communication to all the company about the importance of satisfaction both in the client's requirements and in the legal and regulations
- The Quality and Environmental Policy diffusion and the fixation of the Quality and Environment targets.
- To carry out revisions by the Management.
- To provide the needed resources.

2.2. Standard

The **SLC ADAPT** product is designed, manufactured and commercialized in accordance with the standard **EN ISO 9001** of Quality Assurance. The **CE** marking shows the conformity to the EEC Directive (quoted between brackets) by means of the application of the following standards:

- **2006/95/EC** of Safety of Low Voltage
- **2004/108/EC** of Electromagnetic Compatibility (EMC).
- in accordance with the specifications of the harmonized standards. Standards of reference:
- **EN 60950-1**: Equipment Information Technology. Security. Part 1: General requirements.
- **IEC/EN 62040-2**: Uninterruptible power supplies (UPS). Part 2: Requirements for Electromagnetic Compatibility (EMC).
- **IEC/EN 62040-3**: Uninterruptible power supplies (UPS). Part 3: Methods of operation and specification of test requirements.



The declaration of conformity CE of the product is at the disposal of the client previous express request to our head offices.

2.3. Environment

Equipment recycling at the end of its useful life:

Our company commits to use the services of authorised societies and according to the regulations, in order to treat the recovered product at the end of its useful life (contact your distributor).

Packing:

To recycle the packing, follow the legal regulations in force.

Batteries:

The batteries mean a serious danger for health and environment. The disposal of them must be done in accordance with the standards in force.

3. Safety Considerations

The **SLC ADAPT** UPS system is designed for industrial applications and harsh environments.

Nevertheless, the **SLC ADAPT** UPS system is a sophisticated power system and should be handled with appropriate care, following these guidelines.

3.1. Do's

- Read this manual carefully before starting installation and operation of the UPS.
- Review the safety precautions described below to avoid injury to users or damaging equipment.
- All power connections must be completed by a licensed electrician who is experienced in wiring this type of equipment, and who is knowledgeable about all federal, state, and local electrical codes and regulations. **Improper wiring may cause damage to the equipment or injury to personnel.**
- Pay attention to the warning signs, labels and marks on the unit. A warning sign signals the presence of a possibly serious, life-threatening condition.
- Keep the surroundings clean, uncluttered and free from excess moisture.
- Allow only qualified technicians to service the UPS. There are no user-serviceable components. **Do not try to repair it yourself!**
- Use the UPS only for its intended purpose



WARNING - RISK OF LETHAL ELECTRIC SHOCK:

The battery drawer contains a series of 12-Volt batteries that provide high voltage and

energy in the UPS body even when the UPS is not connected to the AC input.

Appropriate precautions should be taken during installation, inspection and servicing.

3.2. Don't's

- Do not open the cover of the UPS or the battery cabinets under any circumstances. All UPS panels and doors should be closed.
- Do not insert any objects through the ventilation holes.
- Do not put objects on the UPS.
- Do not move the UPS while it is operating.
- Do not use the UPS outdoors.
- Do not turn the UPS upside down during transportation.
- Do not connect or disconnect the cable to the battery cabinet before the battery circuit breaker is turned OFF.
- Do not turn ON the battery circuit breaker when the battery cabinet is disconnected from the UPS.
- Do not install next to any gas or electrical heaters. A restricted location is recommended in order to prevent access by unauthorized personnel



WARNING: RISK OF SEVERE DAMAGE TO THE UPS!!!



THIS SYSTEM USES THE NEUTRAL LINE FOR OPERATION. THEREFORE, IT IS STRICTLY FORBIDDEN TO CONNECT THIS SYSTEM TO THE AC POWER SOURCE WITHOUT A NEUTRAL (NULL) CONDUCTOR!!



FAILURE TO USE A NEUTRAL CONDUCTOR MAY CAUSE PERMANENT DAMAGE TO THE SYSTEM.

4. Presentation

Thank you for purchasing a **SLC ADAPT** UPS system. **SLC ADAPT** is the most sophisticated UPS on the market today.

In general, an Uninterruptible Power Supply (UPS) provides backup power for use when the utility AC electric power mains fail or drop to an unacceptable voltage level. **SLC ADAPT** is a whole lot more.

- **SLC ADAPT** is designed to protect your data and equipment and minimize downtime and other adverse effects normally incurred by power irregularities and failures.
- **SLC ADAPT** continually eliminates surges, spikes and sags that are inherent in commercial utility power. Over time, these irregularities shorten the life of equipment and components. The efficiency of **SLC ADAPT** thus helps to extend the life of your equipment, even through normal use when the input power system is constant and continuous.
- **SLC ADAPT** requires very little attention or intervention during normal operation; however, you should read and understand the procedures described in this manual to ensure trouble-free operation.
- **SLC ADAPT** is a parallel redundant UPS and is flexible in structure, allowing it to be easily extended by adding modules as required. The UPS modules are designed for hot swapping, making many different configurations possible.
- The **SLC ADAPT** model fits into a standard 19" wide enclosure. The FREESTYLE is available in two versions: a 10 to 50-kVA configuration and a 60 to 100 kVA configuration

4.1. Features

SLC ADAPT is::

- Reliable, thanks to its N+1 parallel redundancy.
- Both flexible and modular; it may include from one to ten modules.
- A true on-line battery design according to IEC62040-3.
- A "green" power solution thanks to a THD of 5 % at the input, and provides "clean" power to your loads.
- A UPS that employs active current sharing at the input / output.
- A UPS that has an overall efficiency of up to 96 % and a backup efficiency of 98 %.
- Light and small, a 10 kVA module weighs approximately 10 Kg (22 lb.).



Fig. 1. 10 to 50 kVA configuration in 19" rack



Fig. 2. 60 to 100 kVA configuration in a 19" rack

The **SLC ADAPT** is comprised of the following sub-assemblies.

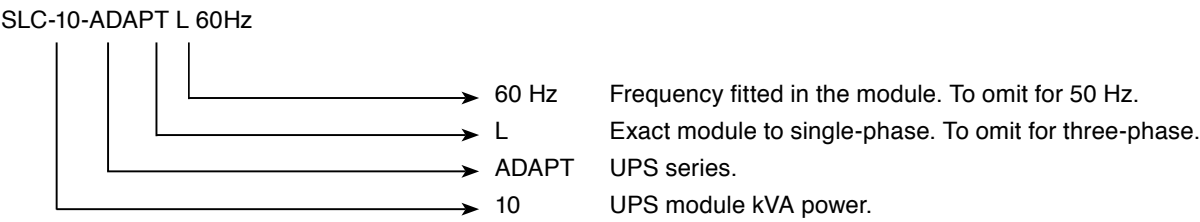
- System Controller.
- 1-10 UPS modules × 10 kVA.
- Static Switch Module.



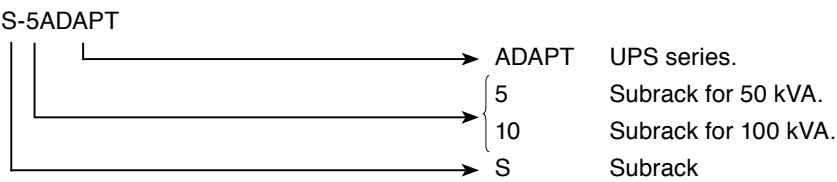
Fig. 3. SLC ADAPT System - full complement

4.2. Nomenclature

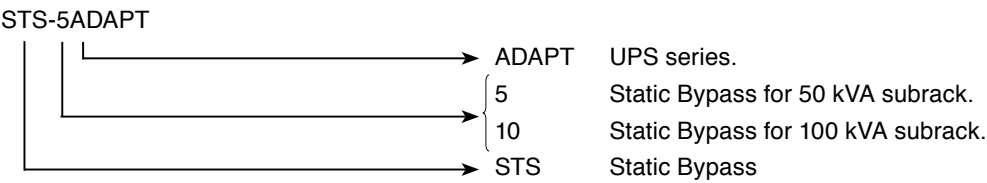
ADAPT UPS module



Subrack for ADAPT UPS

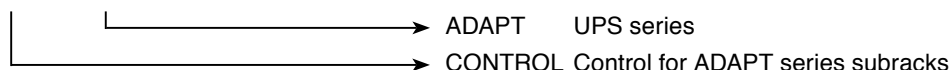


Bypass for ADAPT UPS



Control for ADAPT UPS

CONTROL-ADAPT



4.3. Ac input/output main terminals

The main input and output terminals are located at the lower rear of the unit. The terminals are used to connect the ac input and bypass inputs, the battery, and the ac output. See Fig. 40 (for 50 kVA units) or Fig. 42 (for 100 kVA units).

4.4. System controller

The **SLC ADAPT** system controller has multiple purposes:

- To allow the user to manage and control the UPS.
- To monitor the parameters of all sections of the **SLC ADAPT** via the control panel.
- To collect and summarize data from all sections of the UPS.
- To communicate with external computers for data transfer and operation

The **SLC ADAPT** can operate without the system controller but with reduced functionality.

4.5. UPS module (10 kVA / 8 kW)

The UPS module is the core of the **SLC ADAPT**, which consists of from one to ten identical modules in parallel depending on capacity requirements.

Each module includes a 3-phase charger with PFC and a 3-phase PWM inverter connected to batteries by a classic dc link. Each module is plug-in and weighs a mere 10 kg (22 lb.), approximately.

4.6. Static Switch (ST/SW) module

The centralized hybrid Static Switch enables an automatic transfer of the load from the output of the inverters to an alternate source whenever the inverter can no longer supply power to the load. The static switch can transfer high currents at high speed.

4.7. Battery

The **SLC ADAPT** battery bank is used as a backup in the event that the utility ac input fails.

For systems from 10 kVA through 40 kVA, the batteries may be housed internally, however for systems from 50 kVA through 100 kVA, or for sites where a long backup duration is required, the batteries are housed in an external cabinet next to the **SLC ADAPT** cabinet.

Batteries are charged by the rectifier that powers both the inverter and the battery charger.



Free air circulation around the batteries is extremely important for proper battery safety. If the **SLC ADAPT is installed in a cabinet, the cabinet must have sufficient ventilation openings to permit free air circulation around the batteries.**

This means that solid glass or acrylic-type door panels are not suitable for a cabinet housing the **SLC ADAPT, neither for the front cabinet door nor for the rear door.**

5. Operating modes

The **SLC ADAPT** UPS functions to supply ac electrical power to your load.

While using the **SLC ADAPT**, three modes of operation are possible:

- Normal operation
- Battery operation
- Bypass operation

All three operation modes are encountered during normal UPS use to constantly provide regulated voltage to the load.

In the normal operation mode, the UPS provides total power protection for the load.

In the battery operation mode, the load power is supplied by the battery.

In the bypass mode, power is transferred directly from the ac input to the load, bypassing the inverter. In this mode, there is no protection but it is useful for short-term operation. When power is restored, the UPS returns to normal operation.

In addition to the three operation modes that are set automatically by the UPS, two additional modes can only be invoked via manual intervention: by either the user or a technician:

- Maintenance bypass.
- Emergency Power Off (EPO).
- Details of each mode of operation are described in the sections below.

5.1. Normal operation

The UPS is almost always in normal operation mode. The load receives its power from the inverters that supply stabilized voltage, protected from spikes and irregularities in the ac input.

The ac input system feeds the charger that supplies dc power to the inverter, while concurrently charging the batteries.

5.2. Battery operation

During battery operation, the load continues to receive power from the inverters, but the dc input to the inverter is taken from the batteries, instead of from the rectifier.

The batteries are galvanically connected by dc link to the inverter and the charger. The dc inherently remains constant when the ac input supply drops out, without any switching devices.

The duration of the battery operation is determined by the load demand and the battery capacity.

5.3. Bypass operation

During bypass operation, the load receives power directly from the ac input via the static switch.

Whenever the inverters cannot provide power to the load, either due to an overload or a short-circuit in the load, transfer to the ac input is automatic. As soon as the problem is corrected, the load is transferred back to the inverter.

6. User interface

This section describes the buttons and indicators used to operate the **SLC ADAPT**.

6.1. Control panel

The **SLC ADAPT** Control Panel, located on the front of the controller, provides the user with an interface to the **SLC ADAPT** system. It includes an LCD display, a keypad, buttons and indicators for monitoring and controlling the UPS configuration and functions. The control panel is aimed at both the end-user as well as the service engineer. All of the **SLC ADAPT** parameters can be viewed on the control panel.

Use of the **SLC ADAPT** Control Panel is described in detail in "UPS control panel".

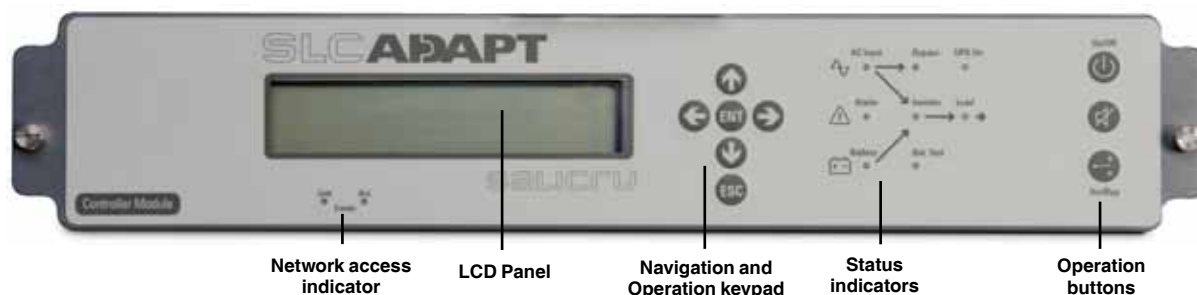


Fig. 4. Control panel

6.2. UPS module panel

The UPS module panel, located on the front of each UPS module, provides the user with the status of that module.



Fig. 5. UPS module panel

6.3. Static Switch panel (bypass)

The static switch panel, located on the front of static switch module, provides the user with the status of the static switch module. All the functions and indications are available on the **SLC ADAPT** Control Panel.



Fig. 6. Static switch panel

6.4. Control screen

The **SLC ADAPT** control screen is illustrated below. It is part of the control panel described on "Control panel". How to read and understand the **SLC ADAPT** control screen is described in detail in "UPS control panel".

The control screen provides menus and displays all aspects of the **SLC ADAPT** systems input, output and static switch as well as operational details. The Fig. 7 below shows the **SLC ADAPT** 3-phase display.

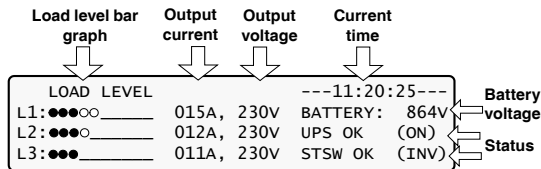


Fig. 7. **SLC ADAPT** control screen

This is how the control screen appears while the UPS is running normally.

6.4.1. Load-level bar graph

The load-level bar graph on the default screen display illustrates the approximate load on each output phase of the UPS, as a percent of the maximum available output for each phase.

The load on each phase is represented by a series of from 1 to 10 dots. Each dot represents about 10 % of the maximum available output per phase.

The dots can be either filled in (black) or clear (white). The number of black dots represents kW, and the number of black and white dots together represents kVA (apparent power).

For example, in Fig. 7, the load on Line 2 is 30 % (3 black dots) of the maximum in terms of kW, and 40 % (3 black dots plus 1 white dot) of the maximum in terms of kVA.

To compute the approximate value in kW or kVA of each dot:

1. Compute the maximum load per phase = $10 \text{ kVA [or 8kW]} \times (\text{total \#modules} - \text{redund. \#modules}) / 3 \text{ phases}$

Dividing the maximum load per phase by 10 gives you the value of 1 dot.

Example: Assume a system with 10 modules, 2 of which are redundant.

$10 \text{ kVA} / 3 \times (10-2) = 3.33 \times 8 = \text{maximum load per phase} = 26.67 \text{ kVA}.$

Thus, $26.67 / 10 = 2.67 \text{ kVA}$ is the approximate value of each dot.

6.5. Navigation and operation keypad

The navigation and operation keypad works in conjunction with the control screen. It allows you to navigate through the available menus using the direction arrow buttons and the Enter and Escape buttons to select or quit, respectively.

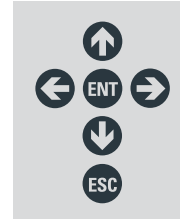


Fig. 8. Navigation and operation keypad

6.6. Status indicators

The status indicators show precisely what is running and how the UPS is providing power to the load.

The diagram below shows the power source and destination routes in use for each of the 3 automated operation modes.

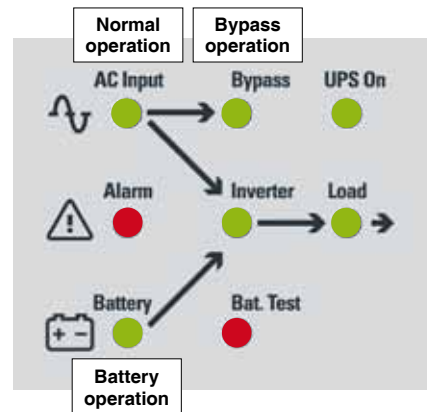


Fig. 9. Status indicators

Ac Line	Green – Shows that the ac input is present and within range
Alarm	Red – Flashes to indicate general alarm condition
Battery	Green – Shows that the battery is in discharge mode
Bypass	Green – Shows that the load is supplied from the ac input
Inverter	Green - Shows that the inverter is supplying power to the load
Bat. Test	Blinking Red – Shows that a battery test is in progress Steady Red – Battery test failure
UPS On	Green – Indicates that the UPS is running
Load	Green – Indicates that ac voltage is available at the output

Table 1. Status indicators

6.7. Operation buttons

The operation buttons illustrated below are “soft” switches.

- **On/Off** resets the entire UPS.
- **Alarm** silence shuts the alarm sounder.
- **Inv/Byp** allows the maintenance engineer to manually change the operation mode.




	UPS ON/OFF switch
	Alarm silence
	Inverter/Bypass manual switch over

Table 2. Operation buttons

6.8. Network access indicator

The network access indicator shows whether the network connection is available and whether it is active.



Fig. 10. Network access indicator

Link	Red – Indicates the presence of a network connection link
Act	Green – Indicates that the network is active

Table 3. Network access indication

6.9. UPS operation modes

6.9.1. Normal operation

During normal operation, the UPS draws power from the ac line, feeds dc to the inverter, which provides ac to the load.

LOAD LEVEL		---11:20:25---
L1: ●●●○	015A, 230V	BATTERY: 868V
L2: ●●●○	012A, 230V	UPS OK (ON)
L3: ●●●	011A, 230V	STSW OK (INV)

Fig. 11. SLC ADAPT control screen in normal operation

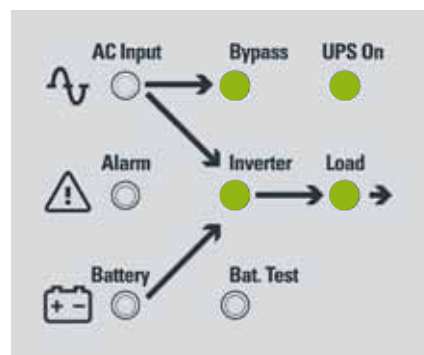


Fig. 12. Normal operation indication

6.9.2. Battery operation

During Battery Operation, the battery supplies dc to the inverter that then provides ac to the load. The red alarm flashes to indicate an abnormal status.

AC failed for the past 5 minutes		
LOAD LEVEL		no ac 005m ---11:20:25---
L1: ●●●○	015A, 230V	BATTERY: 868V
L2: ●●●○	012A, 230V	UPS OK (ON)
L3: ●●●○	011A, 230V	STSW OK (INV)

Status

Fig. 13. Ac power failure

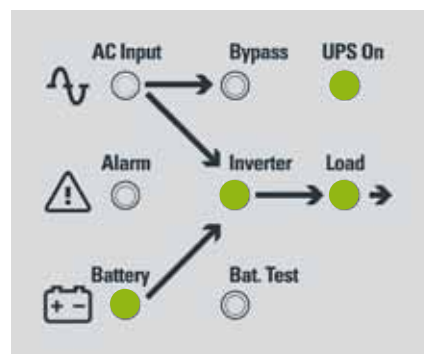


Fig. 14. Ac power failure indication

6.9.3. Bypass operation (automatic)

During Bypass operation, the ac feeds the load via the bypass static switch. The red alarm flashes to indicate an abnormal status

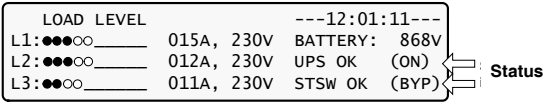


Fig. 15. STSW warning

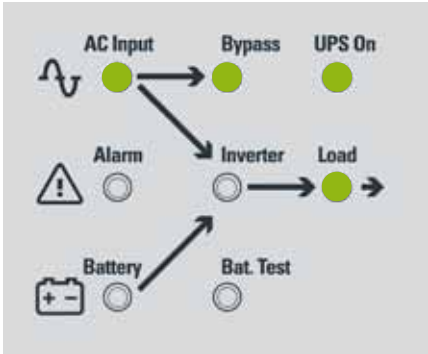


Fig. 16. STSW warning indication

6.9.4. Bypass operation (manual)

If the **SLC ADAPT** is manually switched to bypass operation by pressing the Inv/Byp button, the load is transferred to the mains ac input line. Transfer back to normal operation must be performed manually. The red alarm indicator flashes to indicate an abnormal status.

6.9.5. Emergency power-off – EPO (manual)

An external Emergency Power Off (EPO) switch can be installed by the customer. The EPO switch cuts power to the load in emergency situations. Once switched OFF by the EPO, the **SLC ADAPT** must be restarted manually.

The EPO switch must be an N.O.-type, rated for at least 24 Vdc, 1 A.

7. System installation

7.1. Installing the Freestyle in a Cabinet

The **SLC ADAPT Freestyle** model must be installed in a 19-inch cabinet. This section explains how to do so.

To install the **SLC ADAPT Freestyle** UPS in a 19-inch cabinet:

1. Remove the **SLC ADAPT** controller and the UPS modules from the **SLC ADAPT** chassis. This is accomplished by unscrewing the two screws – one on each side – that hold each module in place (see and).
2. Remove the cage nuts that were used to hold each module in place, two for each module, and one on each side of the **SLC ADAPT** chassis.
3. Remove the screws and the cage nuts that hold the Static Switch module in place, but DO NOT remove the Static Switch module itself.

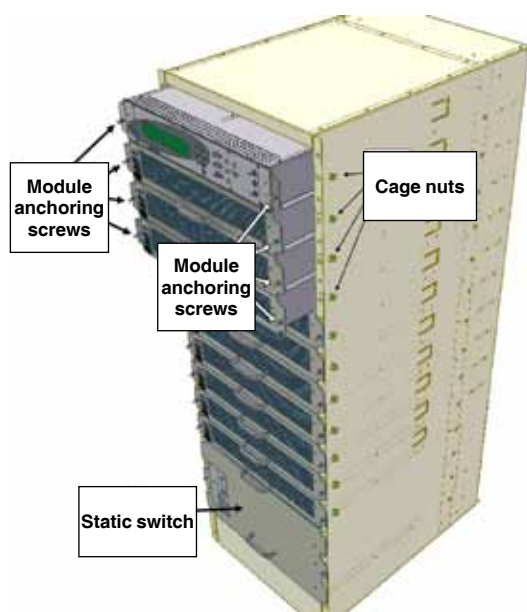


Fig. 17. Installing the Freestyle in a rack (a)

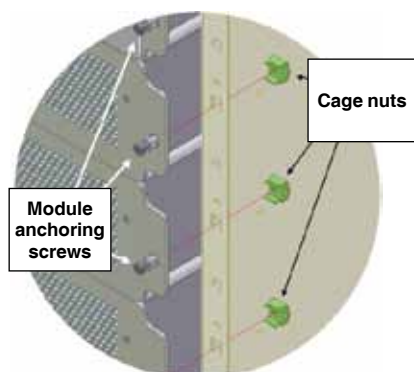


Fig. 18. Installing the Freestyle in a rack (b)

4. Install cage nuts on the right and left mounting flange of the 19-inch cabinet. Cage nuts must be installed for the controller and for each UPS unit, and cage nuts must be installed to anchor the **SLC ADAPT** chassis to the 19-inch cabinet. Generally speaking, the cage nuts should be installed in alternating fashion – one for anchoring the chassis, one for anchoring the UPS module, one for the chassis, one for the module, and so on. See , and .

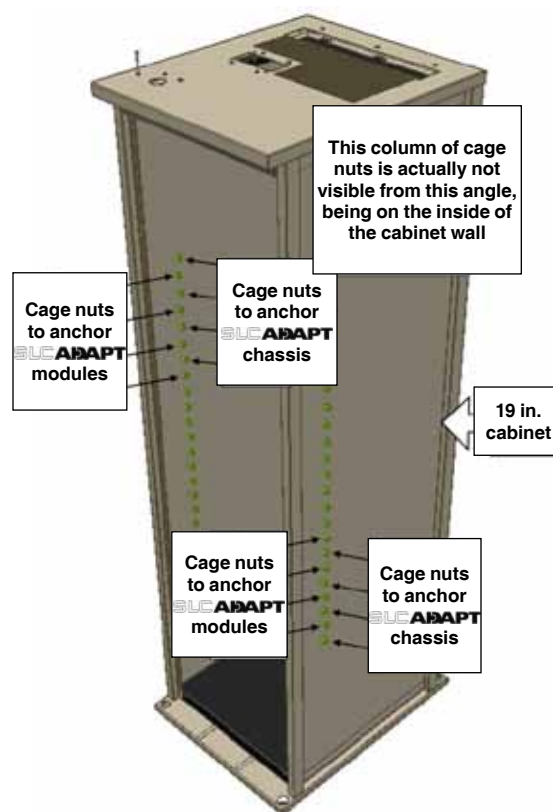


Fig. 19. Installing the Freestyle in a rack (c)

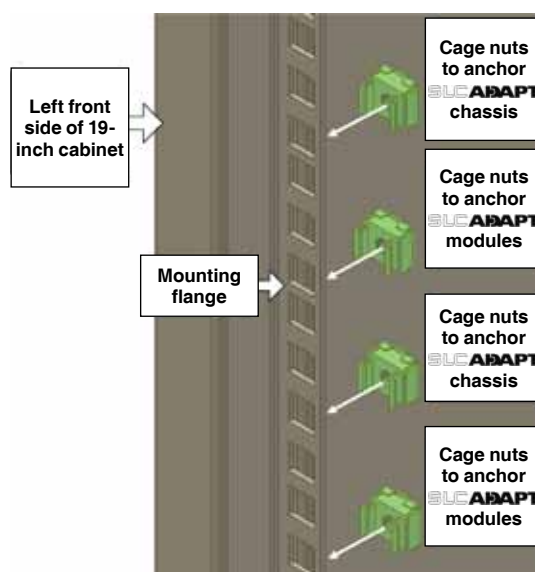


Fig. 20. Installing the Freestyle in a rack (d)

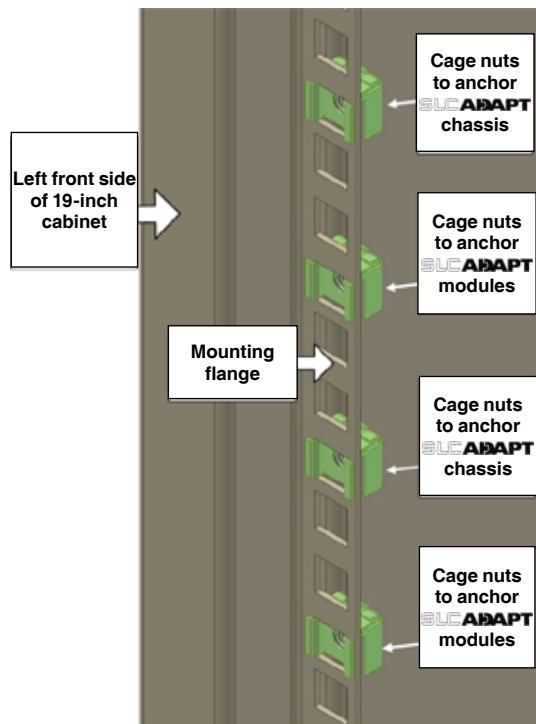


Fig. 21. Installing the Freestyle in a rack (e)

5. Lift the **SLC ADAPT** chassis into the 19-inch cabinet. This is a two-person job, because the chassis is heavy and awkward to move.
6. Secure the **SLC ADAPT** chassis to the 19-inch cabinet by inserting M6 screws through the **SLC ADAPT** chassis and the mounting flange of the 19-inch cabinet, into the cage nuts. See below (Remember that you also have to leave cage nuts in the 19-inch cabinet free for the power module screws.).

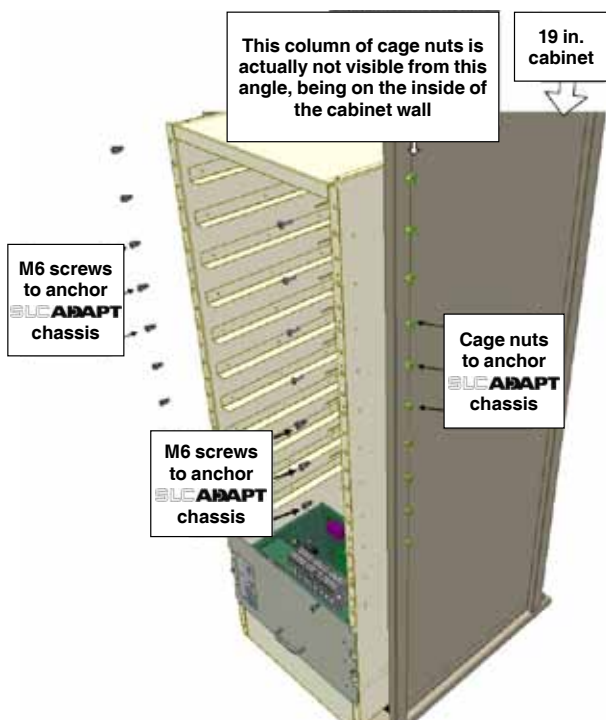


Fig. 22. Installing the Freestyle in a rack (f)

7. Slide the controller module and the power modules into place in the **SLC ADAPT** chassis and secure them in place by screwing their screws through the Power+ chassis and the 19-inch cabinet into the cage nuts (See and).

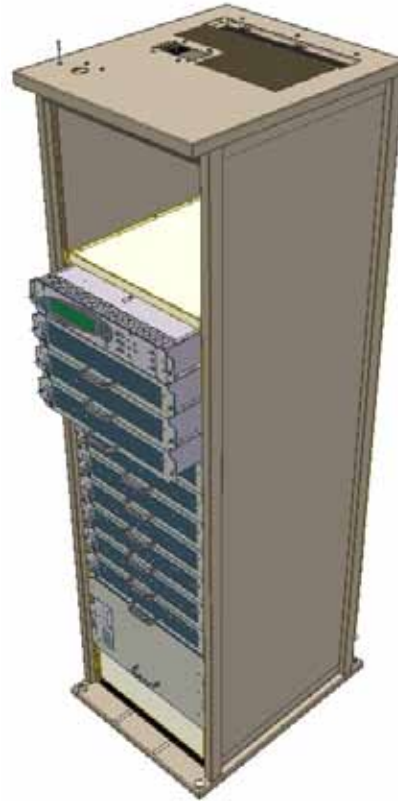


Fig. 23. Installing the Freestyle in a rack (g)

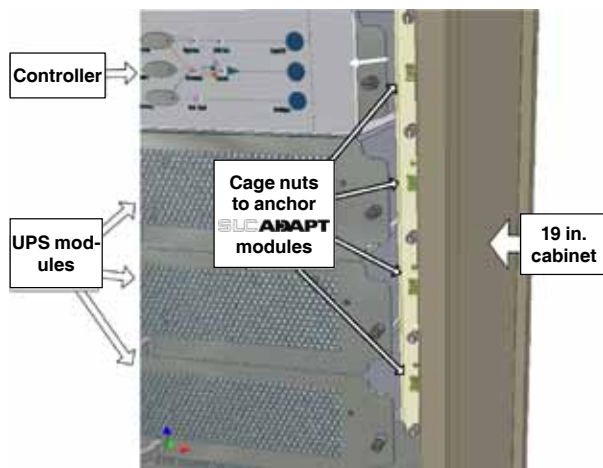


Fig. 24. Installing the Freestyle in a rack (h)

This completes the process of installing the **SLC ADAPT** Freestyle model into a 19-inch cabinet.

7.2. Cabling

7.2.1. Neutral Line

During both installation and operation of the **SLC ADAPT** a neutral line must always be connected to the UPS. This neutral line must be connected at all times when the UPS is working and should not be disconnected at any time.

CAUTION! If at any time the neutral line becomes disconnected, there will be no input or output reference voltage because the input neutral line and the output neutral line are physically linked together. This may result in the system defining its own reference voltage, which will be set by the load distribution between the three phases. **This can cause serious damage to the UPS.**

CAUTION! A 4-pole switching system can disconnect the neutral line.

WARNING! If you have a four-pole mains-to-generator switching system, you are in danger of having the neutral line disconnected when the four-pole switch is operated. This can result in the problems described above.

To avoid these problems, we strongly recommend that, if you use a four-pole mains-to-generator switching system, you install an isolation transformer that constantly provides a neutral line to the UPS.

shows the wrong way to connect the UPS with a grounded-neutral generator.

shows an acceptable connection solution if you already have a grounded-neutral generator.

shows the preferred generator (neutralized rather than grounded) and the preferred connection (three-pole).

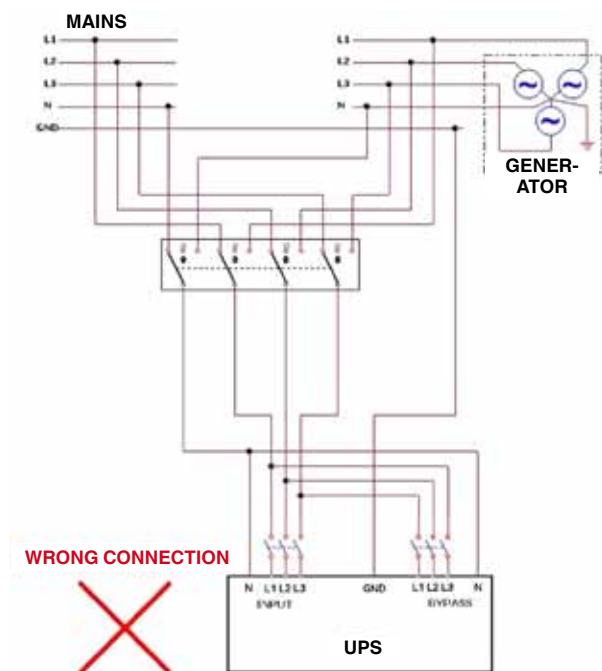


Fig. 25. Wrong way to connect **SLC ADAPT** with a four-pole switch

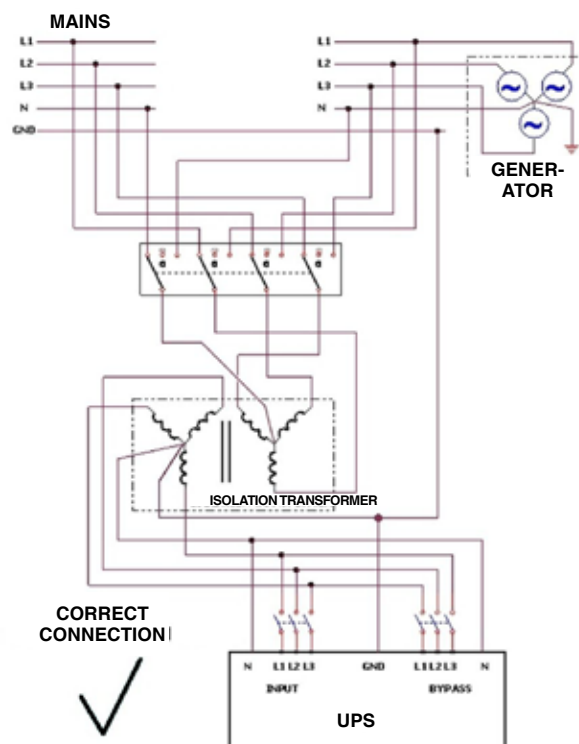


Fig. 26. Acceptable connection for grounded generator and 4-pole switch

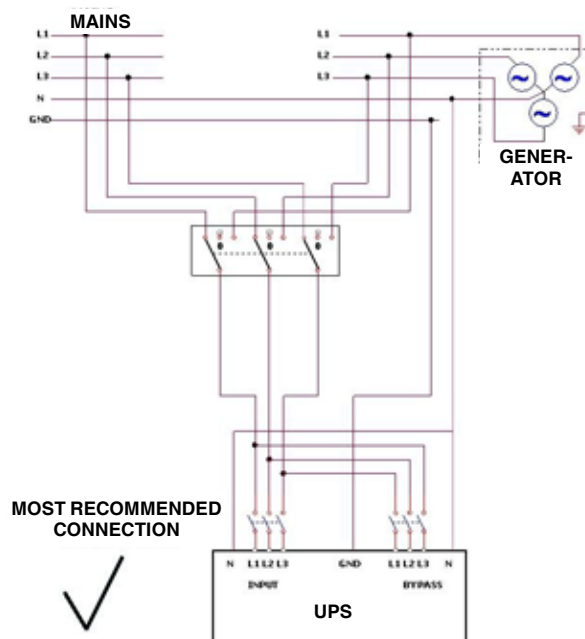


Fig. 27. Preferred generator (neutralized) and connection (3-pole)

WARNING! RISK OF ELECTRICAL SHOCK OR INJURY! INSTALLATION MAY BE PERFORMED BY QUALIFIED TECHNICIAN ONLY!

BE SURE TO USE CABLING WITH A CROSS-SECTIONAL AREA SUFFICIENT FOR MAXIMUM POSSIBLE CURRENT WHEN CONNECTING BETWEEN THE AC MAINS AND THE UPS, AND BETWEEN THE UPS AND THE LOADS.

7.2.2. Installation Instructions for Standard 3-3 Configuration

The ac input/output terminals of the 50 kVA and 100 kVA models differ. Refer to section "7.3. Fusibles AC y DC", for location details.

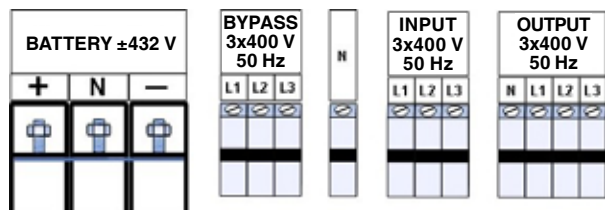


Fig. 28. Terminals for 50 kVA model

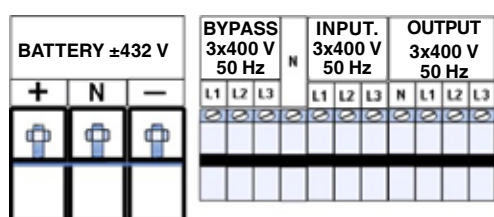


Fig. 29. Terminals for 100 kVA model

1. Connect the Rectifier ac input, Bypass ac input, and output cables.
2. Use a torque wrench to tighten the terminals to 270 lbs/inch.

Note: Use copper conductors only.



WARNING! RISK OF ELECTRICAL SHOCK OR INJURY! INSTALLATION MAY BE PERFORMED BY QUALIFIED TECHNICIAN ONLY!

USE REQUIRED WIRING SIZE ACCORDING TO THE **National Electric Code, ANSI/NFPA 70.**

- FOR 10 TO 50 KVA SYSTEMS: 0 AWG MAXIMUM 600 V, 380 A, 75 °C COPPER WIRE.
- FOR 60 TO 100 KVA SYSTEMS: 500 KCMILS MAXIMUM, 600 V, 380 A, 75 °C COPPER WIRE.

7.2.2.1. Schematic for Standard 3-3 Configuration

below is the schematic for the standard 3-phase configuration (3x400 Vac, 50/60 Hz).

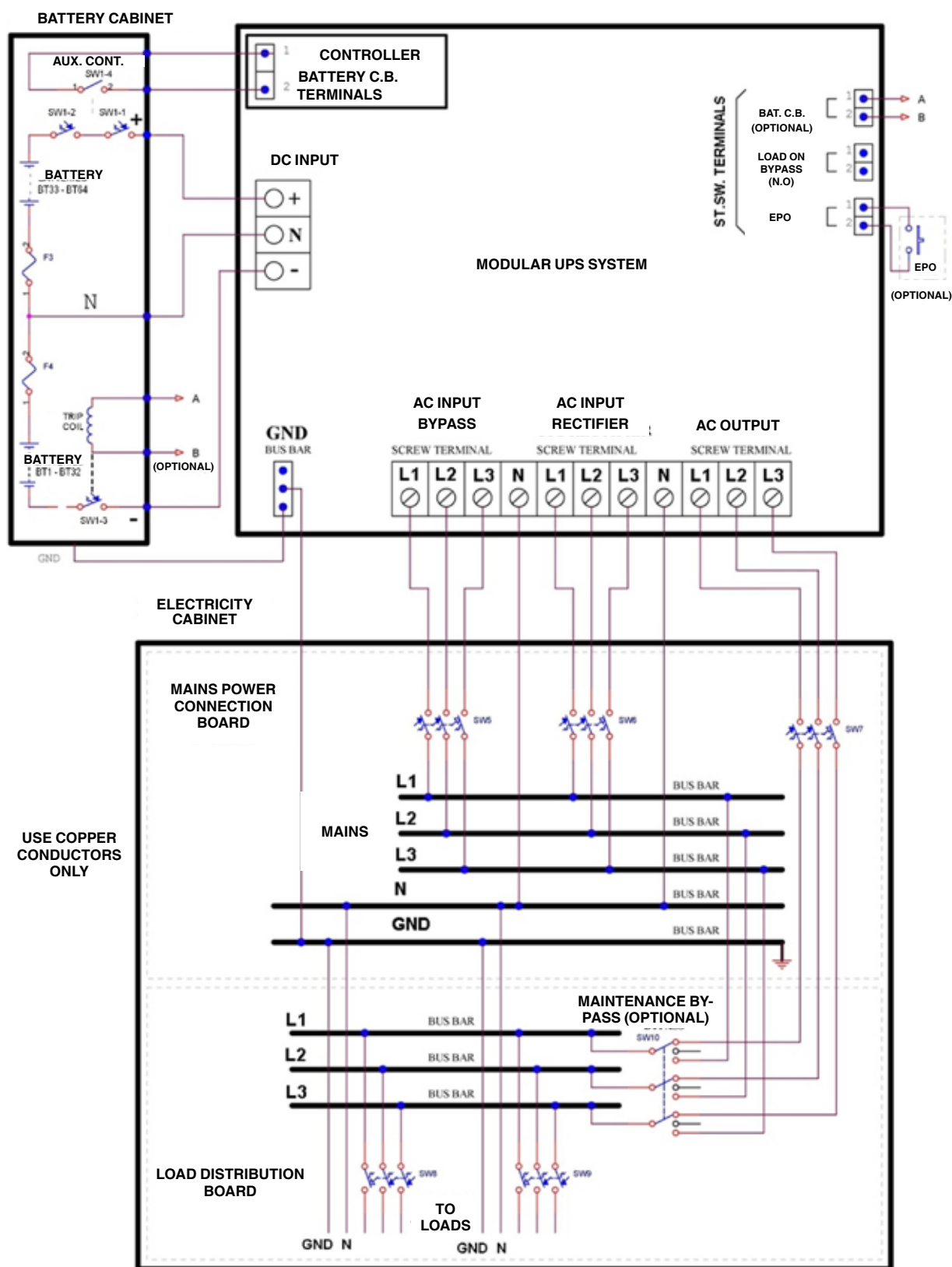


Fig. 30. Schematic for 3-phase configuration

7.2.2.2. Cable and Circuit Breaker Size Recommendations



CAUTION! To reduce the risk of fire, connect the UPS only to a circuit provided with maximum branch circuit over-current protection as indicated in , or according to local codes.

shows the recommended cable and circuit breaker sizes for connecting the **SLC ADAPT** to the electrical panel. Refer to .

SYSTEM OUTPUT CAPACITY (kW)	400 V	
	AC CURRENTS (SW5 – SW10) (A)	WIRE SIZE mm ²
10	16	2.5
20	32	6
30	50	10
40	63	16
50	80	25
60	100	35
70	100	35
80	125	50
90	140	50
100	160	50

Table 4. Cable and circuit breaker size recommendations

Note: The cable sizes given above are recommendations only. Applicable national and local electrical codes must be followed.

Connection of the **SLC ADAPT** to the electrical panels must be performed by a licensed electrician experienced with similar systems.

7.2.3. Installation Instructions for 3-1 Configuration

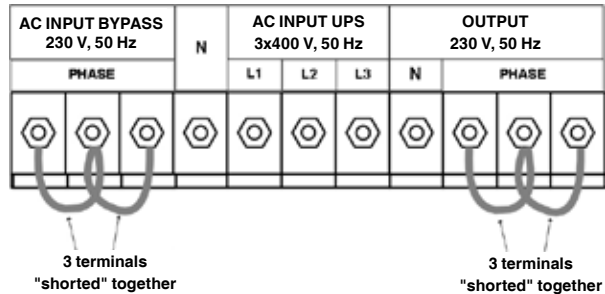
Connecting the **SLC ADAPT** UPS System for use in “3-1” configuration: that is, with three input phases (3x400 V and Neutral) and a single output phase (230 V and Neutral) is outlined in this section



Warning: Maximum safe and permitted power output in the 3-1 configuration is 50 kVA.

7.2.3.1. Terminal Connections for 3-1 Configuration

The main terminals are critical for **SLC ADAPT** installation. The terminals are used to connect the ac input and bypass inputs and the ac output. When connecting cables to the terminals, use a torque wrench to tighten the terminals to 270 lbs./in.



USE COPPER CONDUCTORS ONLY

Fig. 31. Terminal connections for 3-1 configuration

For the 3-1 configuration:

- The Bypass ac terminals L1, L2, and L3 must be shorted together with 35-mm² wires.
- The ac output terminals L1, L2 and L3 must also be shorted together with 35-mm² wires.



Fig. 32. Block diagram: input and output configuration

7.2.3.2. Schematic for 3-1 Configuration

Shown in below is the schematic for the 3-1 configuration.

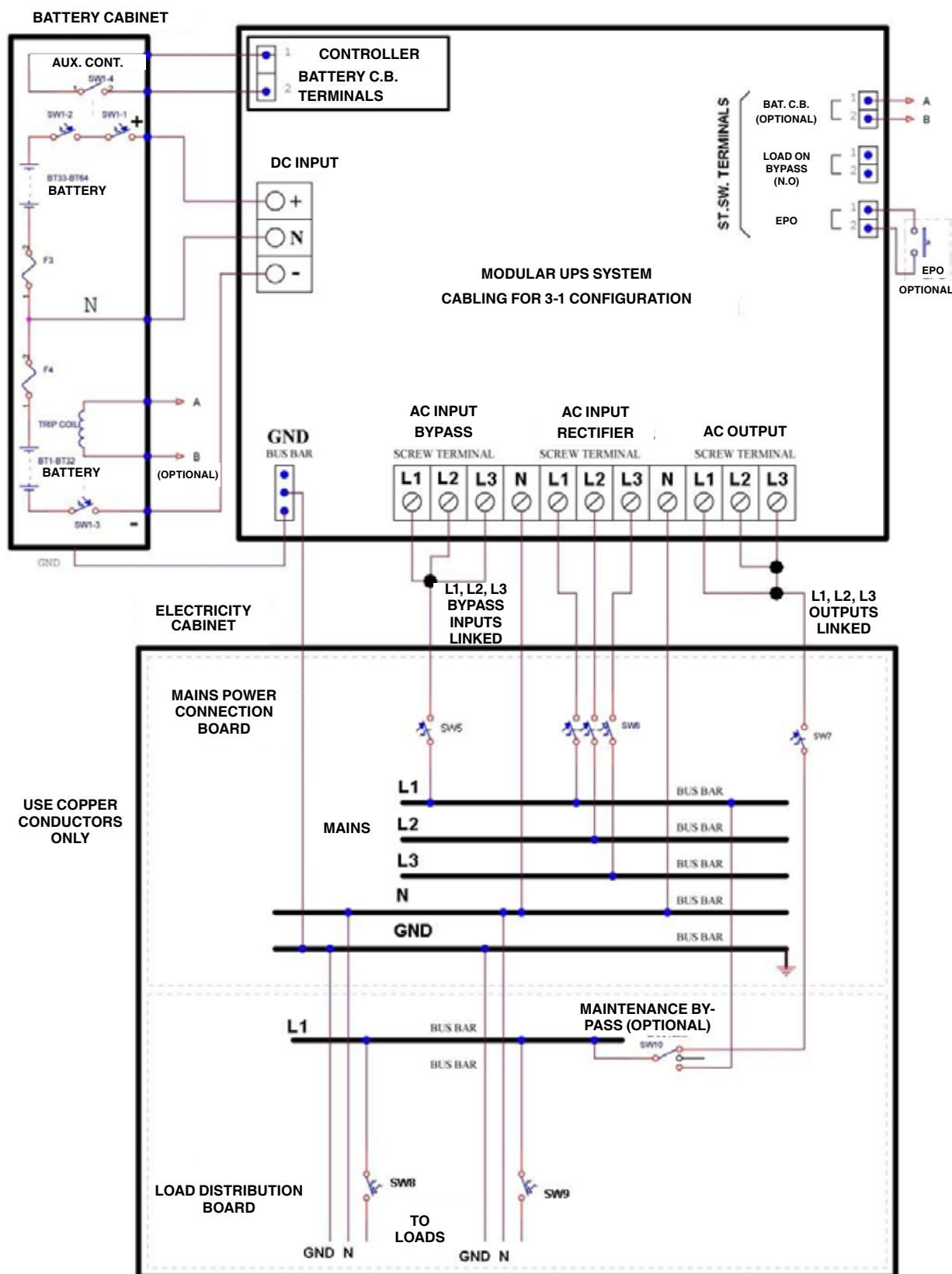


Fig. 33. Schematic for 3-1 configuration

7.2.3.3. Single-phase Dip-switch settings on the modules

Special consideration is needed to operate the **SLC ADAPT** in a single-phase output configuration:

- On the left side of each module, close to the front panel is a small window providing access to three dip-switches.
- For single-phase output, dip-switch no. 3 must be set to the OFF (RIGHT) position on all of the modules of the system.

7.2.3.4. Over-current Protection for 3-1 Configuration

Ensure that the lines into and out of the UPS have protective circuit breakers installed in accordance with the ratings listed in the next table:

SLC ADAPT Model	Line	Maximum over-current protection (CBs)
10 kVA	Ac input	3 x 16 A
	Ac input bypass	50 A
	Load	50 A
	Battery dc input	30 A
20 kVA	Ac input	3 x 32 A
	Ac input bypass	95 A
	Load	95 A
	Battery dc input	60 A
30 kVA	Ac input	3 x 50 A
	Ac input bypass	140 A
	Load	140 A
	Battery dc input	90 A
40 kVA	Ac input	3 x 63 A
	Ac input bypass	175 A
	Load	175 A
	Battery dc input	125 A
50 kVA	Ac input	3 x 100 A
	Ac input bypass	175 A
	Load	175 A
	Battery dc input	145 A

Table 5. Required over-current protection (10 – 50 kVA)

7.2.4. Installation Instructions for 1-1 Configuration

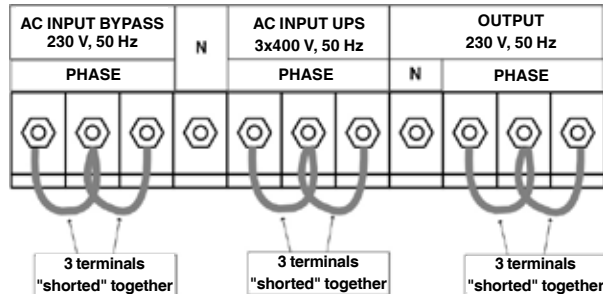
Connecting the **SLC ADAPT** UPS System for use in “1-1” configuration; that is, with single input and output phases (“1-1” configuration) of 230 Vac with respect to Neutral is outlined in this section.



Warning: Maximum safe and permitted power output in the 3-1 configuration is 50 kVA.

7.2.4.1. Terminal Connections for 1-1 Configuration

The main terminals are critical for **SLC ADAPT** installation. The terminals are used to connect the ac input and bypass inputs and the ac output. When connecting cables to the terminals, use a torque wrench to tighten the terminals to 270 lbs./in.



USE COPPER CONDUCTORS ONLY

Fig. 34. Terminal connections for 1-1 configuration

For the 1-1 configuration:

- The ac input bypass terminals L1, L2, and L3 must be shorted together with 35-mm² wires.
- The ac input UPS terminals L1, L2, and L3 must be shorted together with 35-mm² wires.
- The ac output terminals L1, L2 and L3 must also be shorted together with 35-mm² wires.

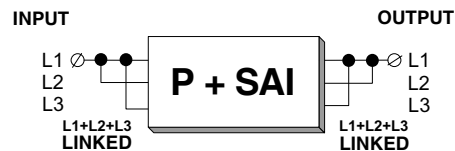


Fig. 35. Block diagram: input and output configuration

7.2.4.2. Schematic for 1-1 Configuration

Shown in below is the schematic for the 1-1 configuration:

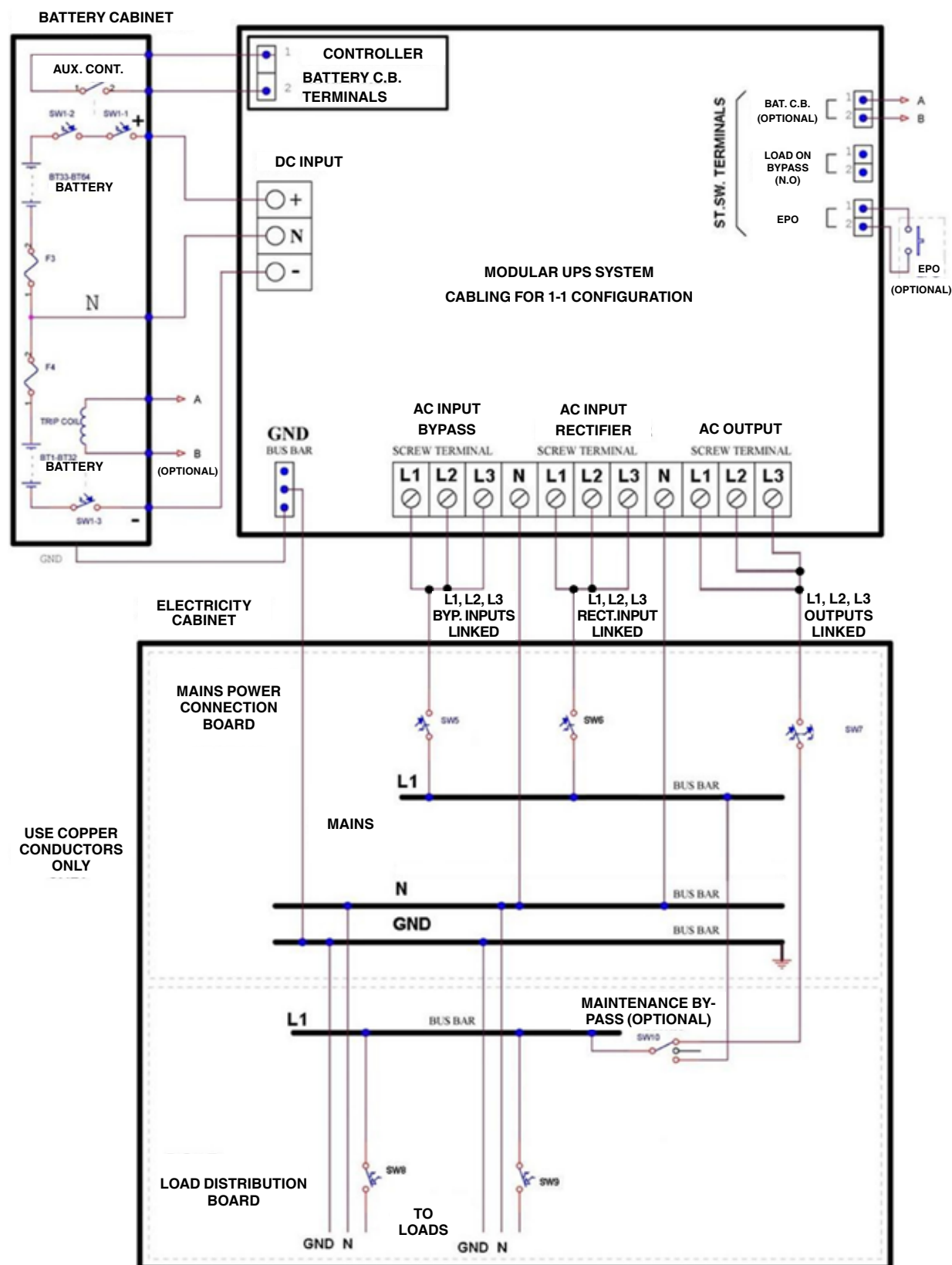


Fig. 36. Schematic for 1-1 configuration

7.2.4.3. Single-phase Dip-switch settings on the modules

Special consideration is needed to operate the **SLC ADAPT** in a single-phase output configuration:

- On the left side of each module, close to the front panel is a small window providing access to three dip-switches.
- For single-phase output, dip-switch no. 3 must be set to the OFF (RIGHT) position on all of the modules of the system.

7.2.4.4. Over-current Protection for 1-1 Configuration

Ensure that the lines into and out of the UPS have protective circuit breakers installed in accordance with the ratings listed in the next table for your **SLC ADAPT**:

SLC ADAPT Model	Line	Maximum over-current protection
10 kVA	AC input	50 A
	AC Bypass input	
	Load	30 A
	DC Battery input	
20 kVA	AC input	95 A
	AC Bypass input	
	Load	60 A
	DC Battery input	
30 kVA	AC input	140 A
	AC Bypass input	
	Load	90 A
	DC Battery input	
40 kVA	AC input	175 A
	AC Bypass input	
	Load	125 A
	DC Battery input	
50 kVA	AC input	220 A
	AC Bypass input	
	Load	150 A
	DC Battery input	

Table 6. Required over-current protection

7.2.5. Connecting the Batteries within the Battery Cabinet

- Assemble the batteries within the battery cabinet and make necessary connections to the switch inside the battery cabinet.
- Measure the DC voltage at the switch inside the cabinet.
- Verify that you obtain values of +384 Vdc (red) and -384 (black) with reference to N (blue).

7.2.5.1. Connecting the Battery Cabinet to UPS

Connect the cables of the battery cabinet to the dc input terminals on the **SLC ADAPT**.

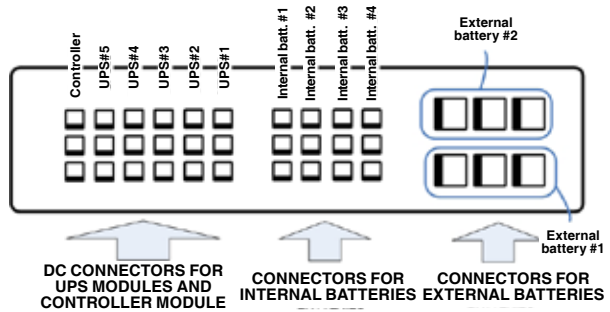


Fig. 37. Dc terminal locations on 50 kVA model

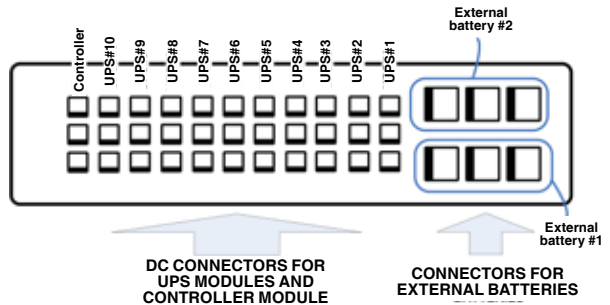


Fig. 38. Dc terminal locations on 100 kVA models

Note: The switch on the battery cabinet should be in Off position (not conducting).

7.3. Ac and dc fuses

Ac and dc fuses are located on the rear panel of the UPS, above the terminals.



Fig. 39. Photo of ac and dc fuses and terminals (50 kVA model)

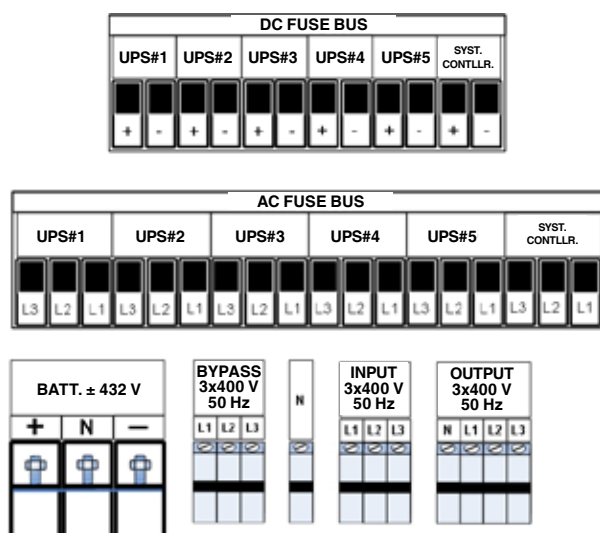


Fig. 40. Diagram of ac and dc fuses and terminals (50 kVA model)



Fig. 41. Fusibles AC y DC y terminales (mod. 100 kVA)

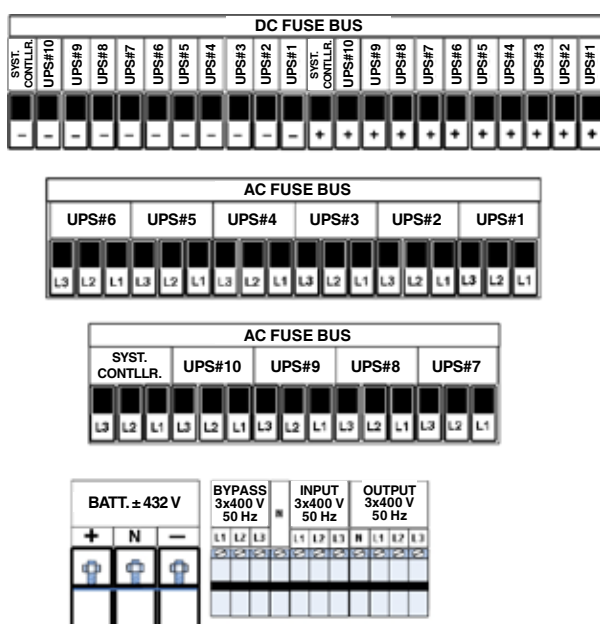


Fig. 42. Diagram of ac and dc fuses and terminals (100 kVA model)

7.4. Special Terminal Connections

This section describes the special-purpose terminal connections of the **SLC ADAPT Freestyle**.

Special-purpose connections are located inside the static switch tray. To access the special-purpose terminals, the static switch tray must be partially slid out (after disconnection of the UPS from all voltage sources and following standard safety procedures). shows a view from above of the open static switch tray and the location of the special terminal connections.

provides a closer look at the connections.

Note: There are also some special purpose connections on the rear of the controller module.

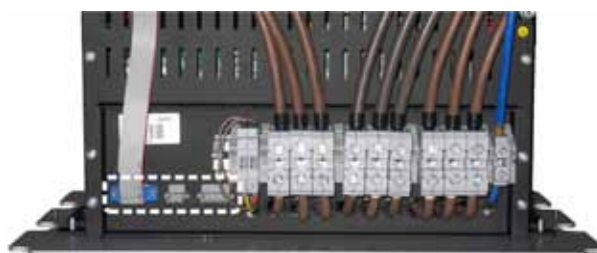


Fig. 43. Special purpose terminals in STSW tray

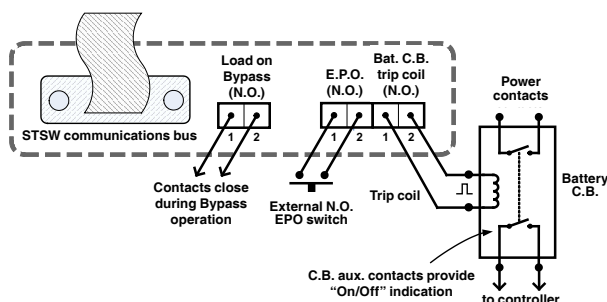


Fig. 44. Close-up of special purpose terminals

7.4.1. Load on Bypass Alarm

This output dry contact is Normally Open, and closes when the UPS transfers the load to bypass (). The dry contact reopens again when the UPS returns to inverter mode.

7.4.2. Battery Trip Coil

The battery trip coil terminals are intended to be connected to the trip coil of the battery circuit breaker (). If this is done and the EPO switch is activated, the **SLC ADAPT Freestyle** sends a pulse of 230 V to the battery circuit breaker trip coil, causing the battery circuit breaker to turn OFF.

Use of the battery trip coil means that not only will use of the EPO switch cut all ac output from the UPS, it will also turn off the battery circuit breaker.

7.4.3. Emergency Power-off

An external Emergency Power-Off (EPO) switch can be installed by the customer to enable immediate shutdown of the UPS. Once switched off by the EPO, the **SLC ADAPT** must be restarted manually.

The UPS has two terminals marked "EPO" for connection of an EPO switch (). Use of a large mushroom-type N.O. (normally open) push button rated for not less than 1 A / 24 Vdc is recommended. Verify continuity of the switch at its connection points before installing.

To restart the UPS following use of the EPO, turn off all input circuit breakers (rectifier ac input, bypass ac input, battery), release the EPO switch (if the locking type), and then start the **SLC ADAPT** as normal (see section "UPS Routine Start-up", **SLC ADAPT** routine start-up).

7.5. Inspections to be performed prior to installation

	TYPE OF CHECK	REQUIREMENT
1.	Ambient temperature in the immediate location of the equipment	Recommended: +15 °C and +25 °C
		Required: -10 °C and +40 °C
2.	Humidity and condensation	Verify that there is no water condensation or dampness within the installation site
3.	Ventilation	Verify that sufficient airflow or forced ventilation is provided for battery cabinets location
4.	Foundation and route to installation site	Verification of adequate structure, space and clearance for dimensions and weights of the UPS units and their battery cabinets
5.	When planning the location of the units, room for access to battery cabinets and electrical boards is critical.	Verify 91 cm clearance at rear for cable connections and 100 cm at front for user access and service
6.	Circuit breakers on the electrical board supplying the system	Must be in accordance with vendor system specifications and connection schematic
7.	Diameter of input and output power cable connections, PE (Gnd) and neutral lines.	Must comply with local and international codes, and be appropriate for the circuit breakers protecting them. Refer to appropriate connections schematic.
8.	Lightning / Voltage surge protection on electrical board supplying the system.	Voltage surge suppressors type B are recommended to be installed between each phase and the neutral line: Ratings: 300 Vac for 220-230 Vac mains.
9.	Ac input voltage	Phase-to-Phase: 3x400* Vac, ±10 % Phase-to-Neutral: 230* Vac, ±10 %
10.	Voltage between neutral and ground	0 – 2 Vac
11.	System installation and start-up	Must be performed only by authorized personnel in accordance with connection schematic, vendor system specifications and this User Guide

Table 7. Pre-installation inspections

* Or other, according to nominal voltage rating of local power mains.

7.6. Installation procedure

	OPERATION
1.	Remove rear covers and connect ac input and output power cables to terminals according to markings as shown in this User Guide and according to the appropriate schematic (see step 2 below). Verify correct phase sequence between board and UPS.
2.	Connect ground lines to busses according to markings as shown in the appropriate schematic: 3-3 Configuration: see . 3-1 Configuration: see . 1-1 Configuration: see . Verify secure connections.
3.	Connect the dc power cables of the battery cabinets to the UPS terminals according to markings as shown in the appropriate schematic (see step 2 above). Connect neutral and ground lines to busses as per the connection diagram. Verify correct polarity of the connections (+ / N / -) Between the Battery Cabinets C.B.s / Terminals and the UPS terminals. Auxiliary contacts of Battery C.B.s are connected to UPS Controller inputs "Bat CB" and "Com" as marked.
4.	If an external battery cabinet is being used, before turning on the battery cabinet circuit breaker perform the following two checks: 4.1) Measure the voltage between the (+) and (-) terminals on the battery cabinet. The voltage must be within the range of 768–864 Vdc. If the voltage is not within this range, determine what the problem is and resolve it before continuing with system start-up. 4.2) On the battery cabinet, measure the voltage between the (+) terminal and the Neutral terminal, and between the (-) terminal and the Neutral terminal. Both measurements should be within the range of 384–432 Vdc. If a reading outside of that range is obtained, determine what the problem is and resolve it before continuing with system startup.
5.	An external N.O. EPO switch may be connected according to connection schematic. EPO wiring and switch rating must be rated for at least 1A / 24 Vdc.
6.	Before connecting power to each system, verify again that all connections are secure and are according to instructions and schematics.
7.	Continue with section "First-time Startup".

Table 8. Procedimiento de instalación

7.7. First-time Startup

7.7.1. Preparation

1. Prepare the proper infrastructure for the **SLC ADAPT** with adequate cables and connections.
2. Prepare the **SLC ADAPT** for installation. Ensure all components and modules are available and securely fastened to their shelves.
3. Verify that utility ac power is disconnected and that all switches are OFF.
4. Connect the **SLC ADAPT** to the electricity mains according to the correct phase sequence.
5. Connect the battery set(s) to the **SLC ADAPT**.
6. Re-check your connections.
7. Ensure that the maintenance bypass switch is set to NORMAL (OFF).

7.7.2. Operation

Note: Before first setting up the UPS, make sure that the load is not connected.

When applying power to the **SLC ADAPT**, the system automatically runs the startup process without a need to press the On/Off button.

1. Turn the ac input and ac bypass switch ON and wait (for about 2 minutes) for the **SLC ADAPT** to initialize.
2. The start-up sequence will begin and the control panel will show the following sequence. (The details of the display may vary from what is shown in the illustrations below, depending on your system's particulars).

At start-up, the following screen sequence appears:

```

                UPS POWER+
                SC25270105
            W E L C O M E   ! ! !
  
```

Fig. 45. Start-up screen 1

```

                WARNING   !!!
                SYSTEM RUNNING IN:
            S I L I C O N   M O D E   (JP2 - IN)
            -----PLEASE NOTIFY SUPERVISOR-----
  
```

Fig. 46. Start-up screen 2

In “SILICON MODE”, commands issued through the **SLC ADAPT** Control Panel are executed immediately. Operators should exercise caution.

Note: In , “Silicon mode” indicates that the configuration jumper is installed, thus allowing for modifications.

```

    WAIT FOR RESULTS...
    STATIC RAM: PASSED   R.T   CLOCK: PASSED
    EEPROM - 1: PASSED
    EEPROM - 3: PASSED   DC SUPPLIES: PASSED
  
```

Fig. 47. Start-up screen 3

```

    S Y S T E M   I N I T I A L I Z I N G
                SC25270105
    PLEASE WAIT FOR COUNT DOWN TO FINISH
                45 SECONDS LEFT
  
```

Fig. 48. Start-up screen 4

During this step, the LEDs are also checked sequentially.

3. Finally, the normal default screen is displayed.

```

    LOAD LEVEL          ---21:20:25---
    L1: _____ 000A, 230V BATTERY: 864V
    L2: _____ 000A, 230V UPS OK (ON)
    L3: _____ 000A, 230V STSW OK (INV)
  
```

Fig. 49. Default screen, with no load, for 3-phase output



IMPORTANT NOTE: YOUR **SLC ADAPT** SYSTEM HAS BEEN DELIVERED TO YOU WITH THE OUTPUT VOLTAGE AND FREQUENCY SET TO MATCH YOUR REQUIREMENTS. CHECK NOW TO VERIFY THAT THESE SETTINGS ARE CORRECT.

- To set module/s frequency, see section "Setting Module/s Frequency".
- To set module/s voltage, see section "Setting Module/s Voltage".

(If the voltage and frequency settings are correct, continue with the section below.)

7.7.3. Continue first-time startup

1. Switch all battery switches "ON" – on the UPS and on all battery cabinets, if any.
2. You can now turn on the load devices.
3. After turning on the load devices, verify that you have a normal reading on the display screen. The display will look similar to , but your readings will be different of course.

```

    LOAD LEVEL          ---11:20:25---
    L1: ●●●● 015A, 230V BATTERY: 868V
    L2: ●●●● 012A, 230V UPS OK (ON)
    L3: ●●● 011A, 230V STSW OK (INV)
  
```

Fig. 50. Normal display, system under load (3-phase output)

7.8. Checks to be performed following initial startup

	VERIFICATION	REQUIREMENT	RLT.
1.	Ac input voltage during operation under load. <u>Take measurements on the input terminals of the system.</u>	Phase-to-phase: Not less than 2 % below no-load values measured in item 5 below. Phase to Neutral: Not less than 2 % below no-load values measured in item 5 below.	L1-L2 L2-L3 L3-L1 L1-N L2-N L3-N
2.	With no load on the system, measure current circulation between the units.	I _{rst} should be < 5 A	
3.	With no load on the system, measure the dc voltage of the system.	Total dc voltage between + and – terminals should be between 850 V and 880 V.	(+) - (-)
4.	Voltage between neutral and ground during operation under load <u>On the input terminals of the system.</u>	0–2 Vac	
5.	System output voltage.	380/400/415 V +/- 2 % or other according to system specifications.	
6.	Total system load / output current.	Verify that the system is not overloaded in relation to system specifications.	
7.	Correct and orderly operation.	Verify that the UPS is operating normally in accordance with this User Guide and that no alarms or fault indications are evident.	

Table 9. Checklist following initial startup

Note: It is the responsibility of the customer to notify your vendor to receive approval for any deviations from these requirements.

TO COMPLETE THIS INSTALLATION CHECKLIST, PLEASE SKETCH ON THE FOLLOWING PAGE A DIAGRAM OF YOUR SYSTEM'S CONNECTIONS, OR INCLUDE A FORMAL CONNECTION SCHEMATIC, AND FAX THE TABLE 7 AND 9 TO YOUR VENDOR.

7.9. Connection diagram



Fig. 51. Connection diagram (for completion by the customer)

7.10. Configuration

Perform the following configuration steps from the Control Panel.

7.10.1. Check Configured Modules

Verify that the number of configured modules matches the desired output power, and verify that the number of redundant modules is correct. Modify as needed.

1. Press **Ent** to reach the Main Menu.

```
1> SYSTEM      4> HISTORY  7> SETUP
2> UPS MODULE  5> BATTERY  8> STATIC SW
3> SELFTEST    6> ALARM    9> 
NAVIGATE: <UP, DOWN> 1 SELECT: <ENTER>
```

Fig. 52. Main Menu

2. From the Main Menu select option 7, **Setup**

```
POWER+ System Setup
Type in Level-1 PASSWORD, THEN - ENTER
Your privilege will expire after 15 min.
PASSWORD: _____
```

Fig. 53. Password access

3. Select **Service**, option 8:

[Main Menu > SETUP > (password) > Ent]

```
1> Alarm set    5> Time      9> Silicon
2> Module conf. 6> Site
3> Battery      7> Password #1
4> Charge      8> Service
```

Fig. 54. Setup menu

4. Select **Configure**, option 5, to configure the **SLC ADAPT** modules:

[Main Menu > SETUP > (password) > Ent > Service]

```
1> ----- 4> DryOut Test 7> -----
2> UPSS      5> Configure  8> Powr.Calib
3> ----- 6> En/Dis shar 9> SC2012..
Select, then Enter
```

Fig. 55. Service menu

5. Select **# UPSs (total)**, option 2, to specify the total number of modules in the system:

[Main Menu > SETUP > (password) > Ent > Service > Configure]

```
1> # OF UPSs (redundancy) 5> Dry, Alarms
2> # OF UPSs (total)      6> Calibration
3> # OF BATT              7> Parallel/StandAlone
4> Static Switch Setup    8> REM COMMAND
```

Fig. 56. Configure menu

6. Use the arrow keys to specify the total number of modules installed in the **SLC ADAPT**, and then press **Ent**:

[Main Menu > SETUP > (password) > Ent > Service > Configure > # OF UPSs (total)]

Set number of UPSs (total)

04 (02 redundant)

Fig. 57. # of UPSs (Total)

7. Select 1, **# of UPSs (Redundancy)** in to specify the number of modules used for redundancy:

[Main Menu > SETUP > (password) > Ent > Service > Configure > # OF UPSs (redundancy)]

Set number of UPSs (Redundancy)

01 (04 total)

Fig. 58. # of UPSs (Redundancy)

Note: The redundant modules are designated to replace other system modules when they stop working. For example, a 100-kVA system with 10 modules of which two are configured for redundancy can deliver a maximum of 80 kVA.

7.10.2. Check Total Ampere-Hours

This procedure is designed to ensure that the total capacity of the batteries attached to **SLC ADAPT** matches the definition of the total capacity in the System Controller.

1. Check the total capacity of the installed batteries attached to Power+.
2. Verify that the same value is specified in the System Controller. If not, modify the definition in the System Controller to match the capacity of the installed batteries.

To check the capacity defined in the System Controller:

1. From the Main Menu select option 5, **Battery**.

[Main Menu > BATTERY]

```
Battery capacity: 0020Ah
Charge mode      : Floating
Eq. running time: -----
Charge current   : 053.0A
```

Fig. 59. Battery status

The battery status panel displays the battery capacity defined in the System Controller.

To set the battery capacity in the System Controller to a different value:

1. Note the current value of battery capacity:

[Main Menu > BATTERY > ▼> ▼> ▼> ▼> ▼]

```
1> Battery#1: 020 Ah Total Cap.: 0020 Ah
```

Fig. 60. Battery capacity

2. Adjust the battery capacity to correspond to that of the attached batteries, and press **Ent**:

[Main Menu > SETUP > (password) > Battery > Capacity 0020AH) > Set Capacity of Battery #1]

```
Battery #01 Capacity setup
              10 -990
Capacity      :020 Ah
```

Fig. 61. Set battery capacity

3. Repeat step 1 above to verify the set battery capacity.

7.10.3. Set Date and Time and Serial Number

To verify the date and time set in the System Controller and make sure that they are correct:

1. Use the **←** and **→** keys to select the year, month, day, hour, minute, or second you wish to modify, then use the **0** and **9** keys to set the correct value for the selected item. Press **Ent**:

[Main Menu > SETUP > (password) > Time]

```
Set real time
Year  Month  Day  Hour  Min  Sec
2011  09    30   23    58   00
```

Fig. 62. Date and time

2. Enter the serial number of the Power+ system in the System Controller, and then press **Ent**:

[Main Menu > SETUP > (password) > Site]

```
Site number: 013271
```

Fig. 63. Site number

Note: The serial number of **SLC ADAPT** is on a bar-code label at the top of the unit, on the left hand side, near the front.

7.10.4. Define the IP Address of the UPS

This procedure assigns the Power+ an address within the domain of the customer's computer network.

1. Obtain IP, gateway, and mask addresses from the system administrator of the organization for the Power+ system.
2. Select **Set IP ADDRESS** in the Network menu:

[Main Menu > SETUP > (password) > Ent > Service > SC2012 > Network]

```
1> Set IP ADDRESS      157.211.000.253
2> Set GATEWAY         157.211.000.251
3> Set MASK            255.255.255.000
4> Store      5> SNMP factor  Select:1
```

Fig. 64. Network menu

3. Use the arrow keys to set the IP address, and then press **Ent**:

[Main Menu > SETUP > (password) > Ent > Service > SC2012 > Network > Set IP ADDRESS]

```
Set IP ADDRESS
157.211.000.252
```

Fig. 65. IP Address

4. Use the arrows keys to set the gateway and press **Ent**.

[Main Menu > SETUP > (password) > Ent > Service > SC2012 > Network > Set GATEWAY]

```
Set GATEWAY
157.211.000.251
```

Fig. 66. Gateway

5. Select **Store**:

[Main Menu > SETUP > (password) > Ent > Service > SC2012 > Network]

```
1> Set IP ADDRESS      157.211.000.253
2> Set GATEWAY         157.211.000.251
3> Set MASK            255.255.255.000
4> Store      5> SNMP factor  Select:1
```

Fig. 67. Network menu

Entered information is now stored in the controller.

7.11. Testing

Perform the following tests on the **SLC ADAPT** unit:

7.11.1. Blackout Test

This test is designed to verify the operation of Power+ in the event of a blackout, when no ac power is supplied to the UPS.

1. Turn all ac input to the system Off (turn Off ac input switches to both Bypass and Rectifier).
2. Measure the phase-to-neutral voltage for each output phase. The measurements should all be 230 V (or as specified).

7.11.2. Cold Start

This test is designed to verify the operation of the UPS after all input power (both mains and battery) has been shut off and the UPS is powered up with battery only and no ac input.

1. Turn all ac and dc input to the system Off, so that there are no voltages at any of the inputs to the UPS.
2. Turn On the switch to the dc input (from the batteries) only.
3. Wait approximately 2 minutes for Power+ to initialize (see Section "First-time Startup").
4. Measure the phase-to-neutral voltage for each output phase. The measurements should all be 230 V (or as specified).
5. Turn On the ac inputs to the system.

7.11.3. Test under Load

This test is designed to verify the operation of Power+ under load.

1. Connect the load.
2. Measure the ac input voltage during operation under load. Take the measurements at the output terminals of Power+ (phase-to-phase between L1-L2, L2-L3, and L3-L1 and phase-to-neutral at L1, L2, and L3). Phase-to-phase and phase-to neutral voltage should be not less than 2% below no-load values.
3. Check and record the total system load (output current) and make sure that Power+ is not overloaded with respect to system specifications.
4. Ascertain correct and orderly operation. Verify that Power+ is operating normally and that no alarms or fault indications are present.

7.11.4. Check IP Communication with Controller (optional)

This test is designed to verify that the System Controller is properly configured for communication and that the Web server built-in into the System Controller is functioning properly.

1. Use an RJ45-to-RJ45 crossed cable to attach a notebook computer to the Ethernet (RJ45) port on the rear panel of the System Controller.
2. Configure the Network Connections of the laptop computer to make sure the computer is in the same domain as the UPS. (**Note:** the details of the following configuration procedure are for the Windows XP operating system. The configuration procedure will differ for other operating systems.)
 - a. Right click on the My Network Places icon on your desktop and select Properties.

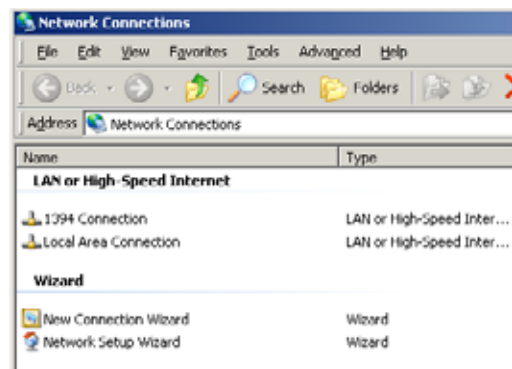


Fig. 68. Network Connections screen

- b. When the Network Connections screen appears, right-click on **Local Area Connection** and select **Properties**.

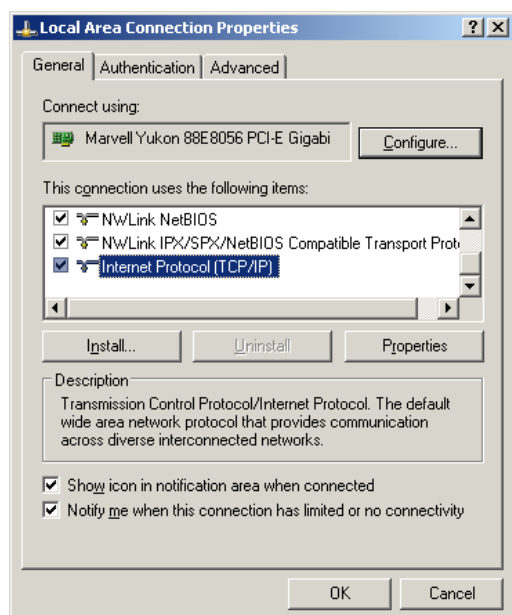


Fig. 69. Local Area Connection Properties screen

- c. When the Local Area Connection Properties screen appears, in the **This connection uses the following items** window scroll down to **Internet Protocol (TCP/IP)** and double click on it.

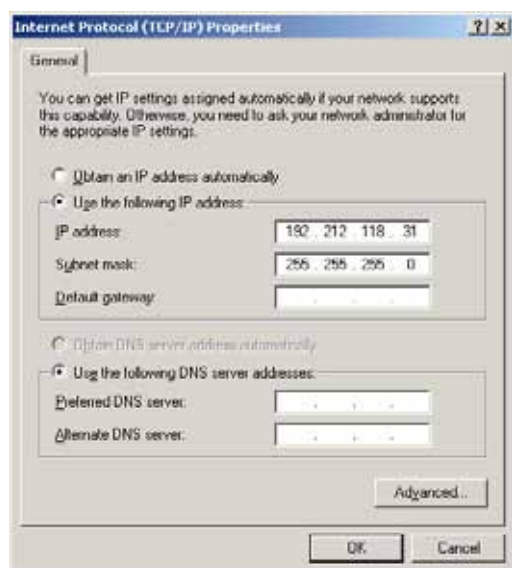


Fig. 70. Internet Protocol (TCP/IP) Properties screen

- d. When the Internet Protocol (TCP/IP) Properties screen appears, click the **Use the following IP address** button and enter **IP address** and **Subnet mask** in the appropriate fields. Leave **Default gateway** blank. Make sure that the first three groups of numbers in the IP address (192.212.118 in the above example) are the same as those of the domain in which the UPS is installed, and that the last number (31 in the above example) is different (it can be any number from 0 to 255, other than the one already assigned to the UPS).
- e. Click **OK** twice to complete the network connection.
3. Open your browser on the laptop computer and enter the IP address of the System Controller in the browser's address field to verify that you can reach the Web server on the System Controller. The system displays the main GMaCi screen, similar to the one shown below.



Fig. 71. Main Screen of built-in web server

7.11.5. Test Wing Option

If Wing has been installed in the UPS, this test is designed to check that it is working properly by sending an SMS message through the Web interface of Wing to a specified phone number.

1. Click the **Send SMS** button on the left sidebar of the Main Screen of the built-in web server.



Fig. 72. Login screen of built-in web server

2. When the login screen appears, enter **admin** for both **User name** and **Password**, and click **OK**.



Fig. 73. SMS screen

3. A record of messages transmitted and received by the controller is recorded.

Note: Only the controller can send SMS messages or alarms.

8. UPS Routine Start-up

8.1. Start-up after Shutdown

This section describes the start-up procedures for the operator after a **SLC ADAPT** shutdown. After shutdown, the UPS on, Alarm and Load indicators will flash.

After a normal **SLC ADAPT** shutdown the display screen indicates a load of zero amps, the UPS status is “OK, OFF”; the Static Switch status is “OK, BYP”.

LOAD LEVEL		---22:21:18---	
L1:	000A, 230V	BATTERY:	864V
L2:	000A, 230V	UPS OK	(OFF)
L3:	000A, 230V	STSW OK	(BYP)

Fig. 74. Main screen after a power shutdown

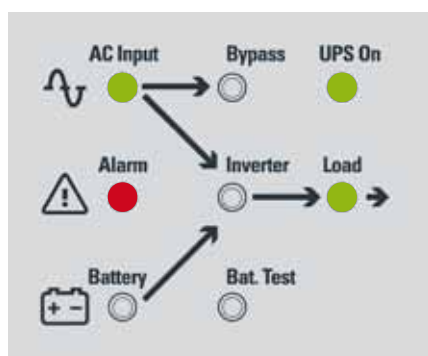


Fig. 75. Main screen after a power shutdown indication

1. Press twice on the On/Off button on the upper right of the system controller panel.

Wait about 2 minutes for the POWER+ to start up.

The following screen is displayed:

LOAD LEVEL		---22:21:18---	
L1:	000A, 230V	BATTERY:	864V
L2:	000A, 230V	UPS OK	(ON)
L3:	000A, 230V	STSW OK	(INV)

Fig. 76. Main screen at power-up

The UPS status should now be “OK, ON” and the STSW status “OK INV”.

If instead of the STSW status being “OK, INV” it continues to be “OK, BYP”, check the Static Switch panel to verify that the inverter is running.

If the inverter indicator on the Static Switch panel is OFF:

- Press the Inv/Byp button on the static switch panel to switch the inverter ON and wait for the indicator to light.

- Press the Inv/Byp button on the lower right of the control panel.

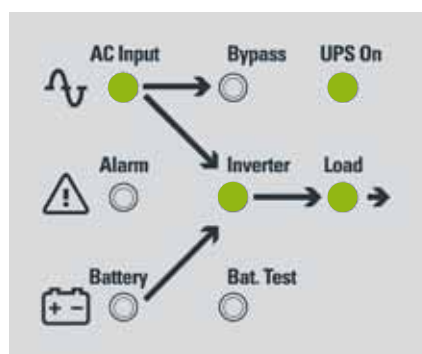


Fig. 77. Normal operation indication

1. Connect the load and observe the results on the display.

LOAD LEVEL		---11:20:25---	
L1:	015A, 230V	BATTERY:	864V
L2:	012A, 230V	UPS OK	(ON)
L3:	011A, 230V	STSW OK	(INV)

Fig. 78. Main screen results

2. Observe that the “dot” bar graph now indicates the load presence and relative power consumption. Filled dots indicate kW; filled dots plus empty dots indicate kVA (apparent power).

SLC ADAPT START-UP IS NOW COMPLETE.

8.2. UPS shutdown (switching to bypass)

1. Switch the load OFF.
2. Press twice on the On/Off button.
3. Wait 2 minutes for the **SLC ADAPT** to shut down. The control screen will indicate UPS OK (OFF).

LOAD LEVEL		---	22:21:18	---
L1:	000A, 230V	BATTERY:	864V	
L2:	000A, 230V	UPS OK	(OFF)	
L3:	000A, 230V	STSW OK	(BYP)	

Fig. 79. Main screen – switching to bypass

Note: This does NOT switch the entire **SLC ADAPT** OFF. Power is still delivered to the load but in bypass.

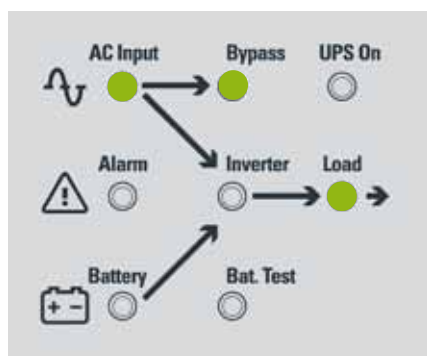


Fig. 80. Bypass indication

8.3. UPS total shutdown (no ac output)

1. Switch the load OFF.
2. Press and hold the On/Off button for 10 seconds.
3. The control screen will indicate UPS OK (OFF).

LOAD LEVEL		---	23:14:40	---
L1:	000A, 230V	BATTERY:	864V	
L2:	000A, 230V	UPS OK	(OFF)	
L3:	000A, 230V	STSW Warning !		

Fig. 81. Main screen – total shutdown

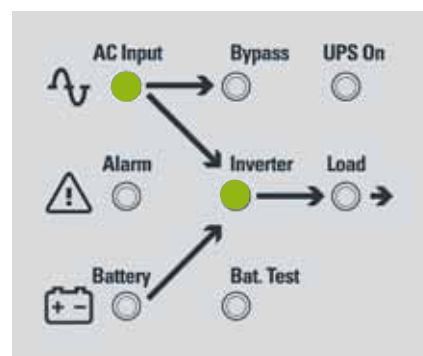


Fig. 82. UPS off indication

9. UPS control panel

The user manages the **SLC ADAPT** system via a touch-pad control panel and an LCM (LCD) display on the front panel of the controller. The control panel serves as the user's primary interface with the system. Messages, warnings, and error conditions are relayed to the user through the display, LEDs and audible alarms.

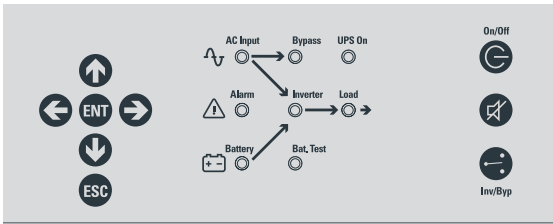


Fig. 83. Control panel

The remainder of the current chapter contains a quick-reference summary of the functions available through the **SLC ADAPT** control menus.

Chapter "UPS Menu functions in detail" illustrates in detail the functions available through the **SLC ADAPT** control menus.

9.1. Quick-Reference Summary of UPS Menu Functions

The following flowcharts detail the structure of the **SLC ADAPT** menus.

The symbol **M.X.Y** directs you to a following chart. For example, **M.7.3** means "go to the diagram labelled M.7.3. Diagram M.7.3 illustrates sub-option 3 of Main Menu option 7.

MAIN Menu

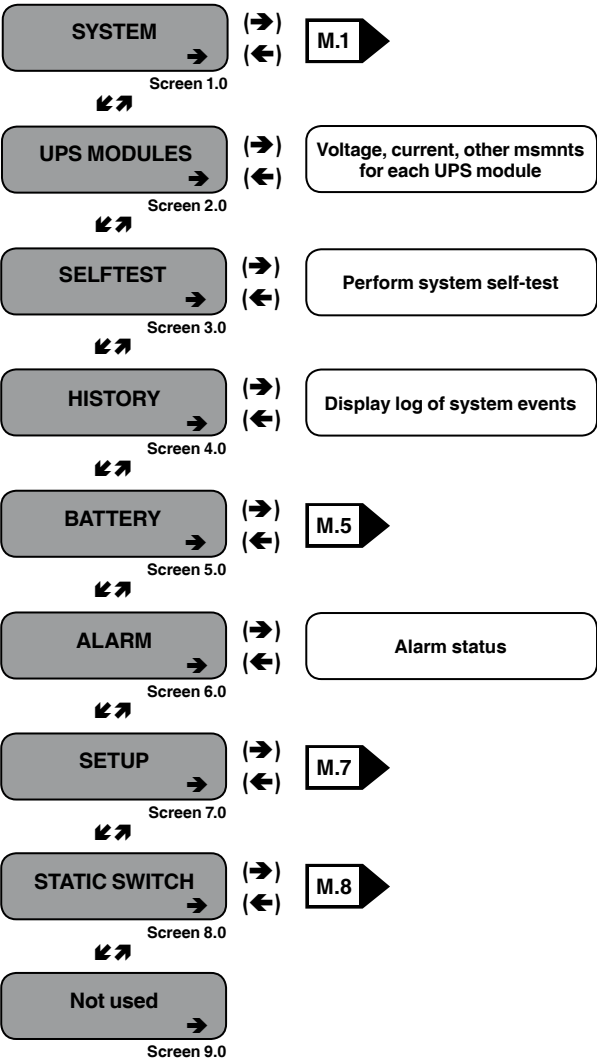


Fig. 84. Main Menu

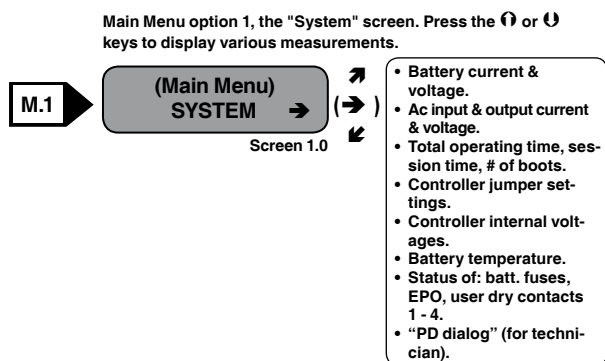


Fig. 85. System menu

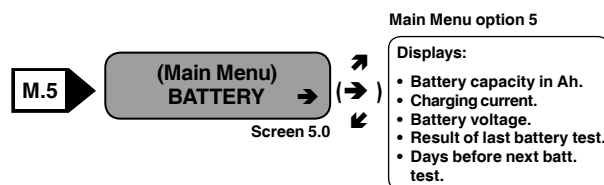


Fig. 86. Battery menu

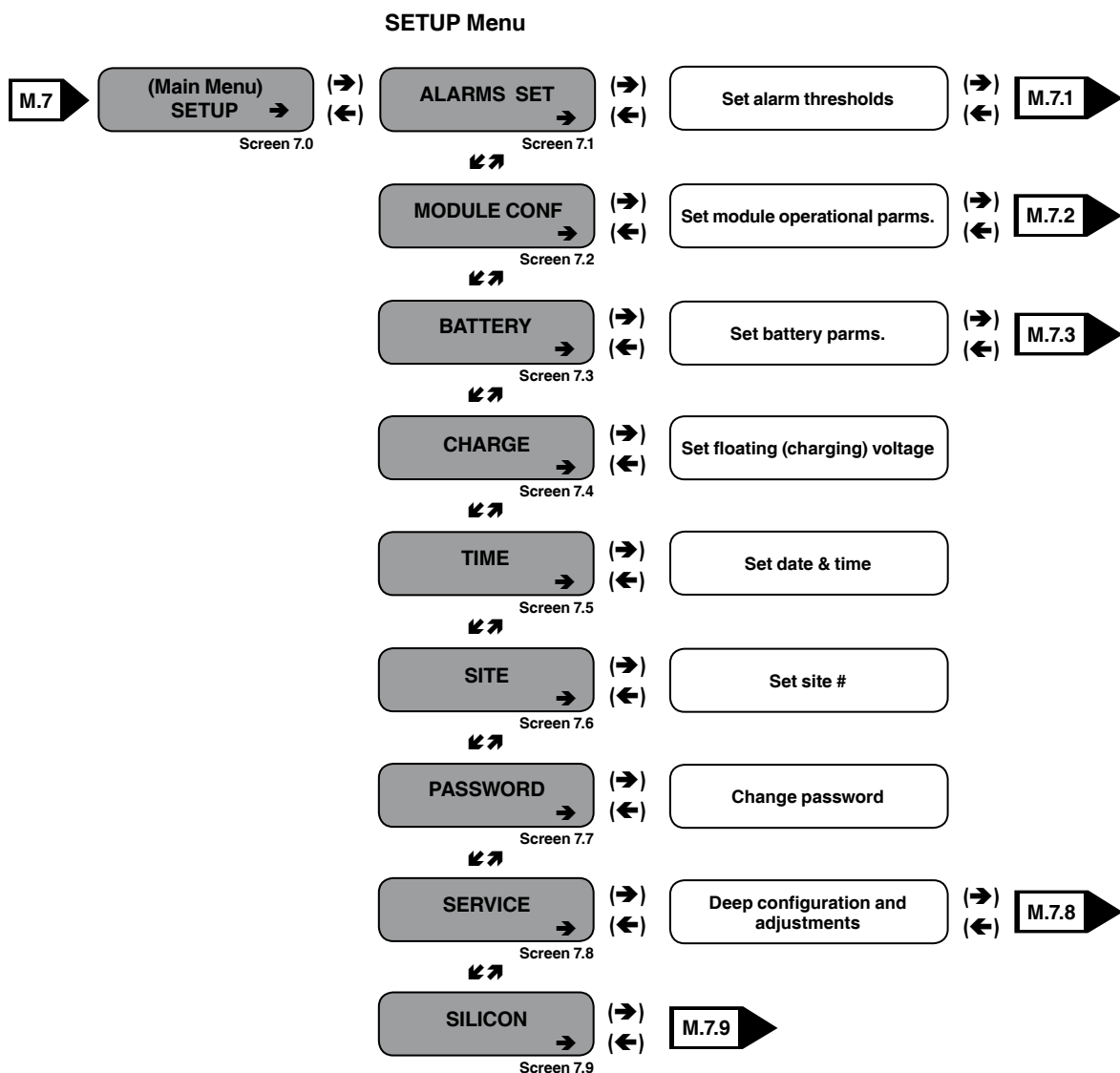


Fig. 87. Setup menu

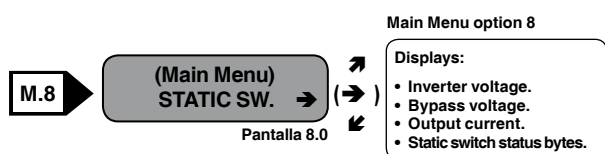


Fig. 88. Static switch menu

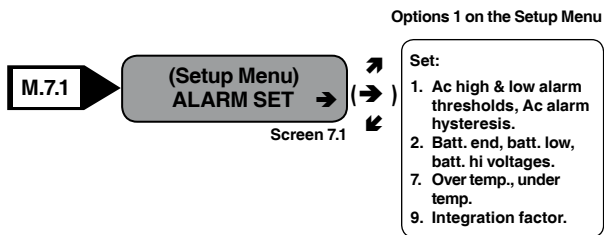


Fig. 89. Alarm set sub-menu

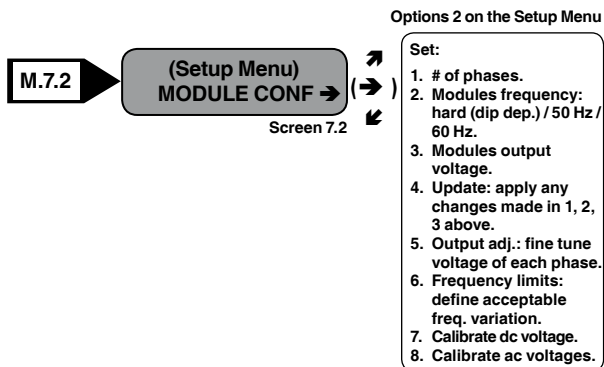


Fig. 90. Module configuration sub-menu

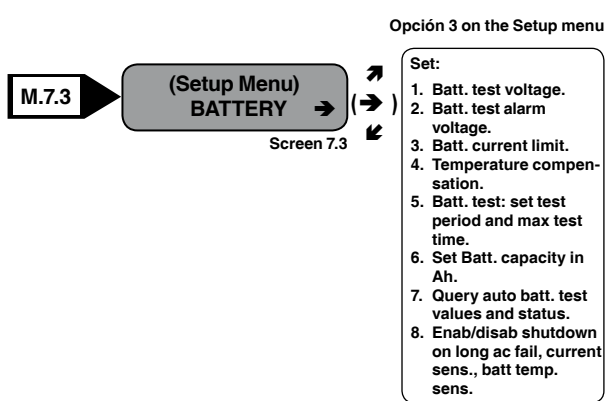


Fig. 91. Battery Menu

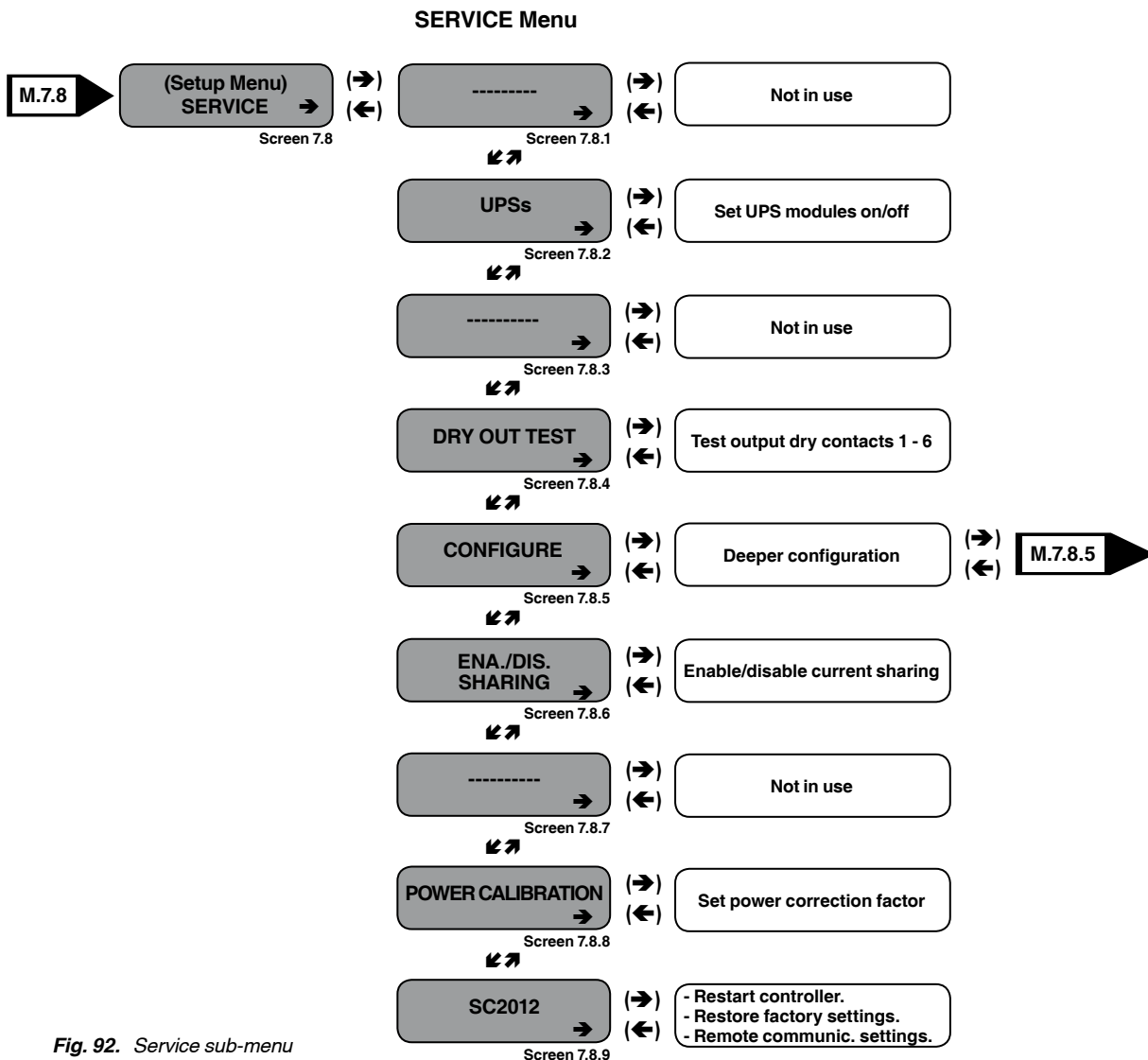


Fig. 92. Service sub-menu

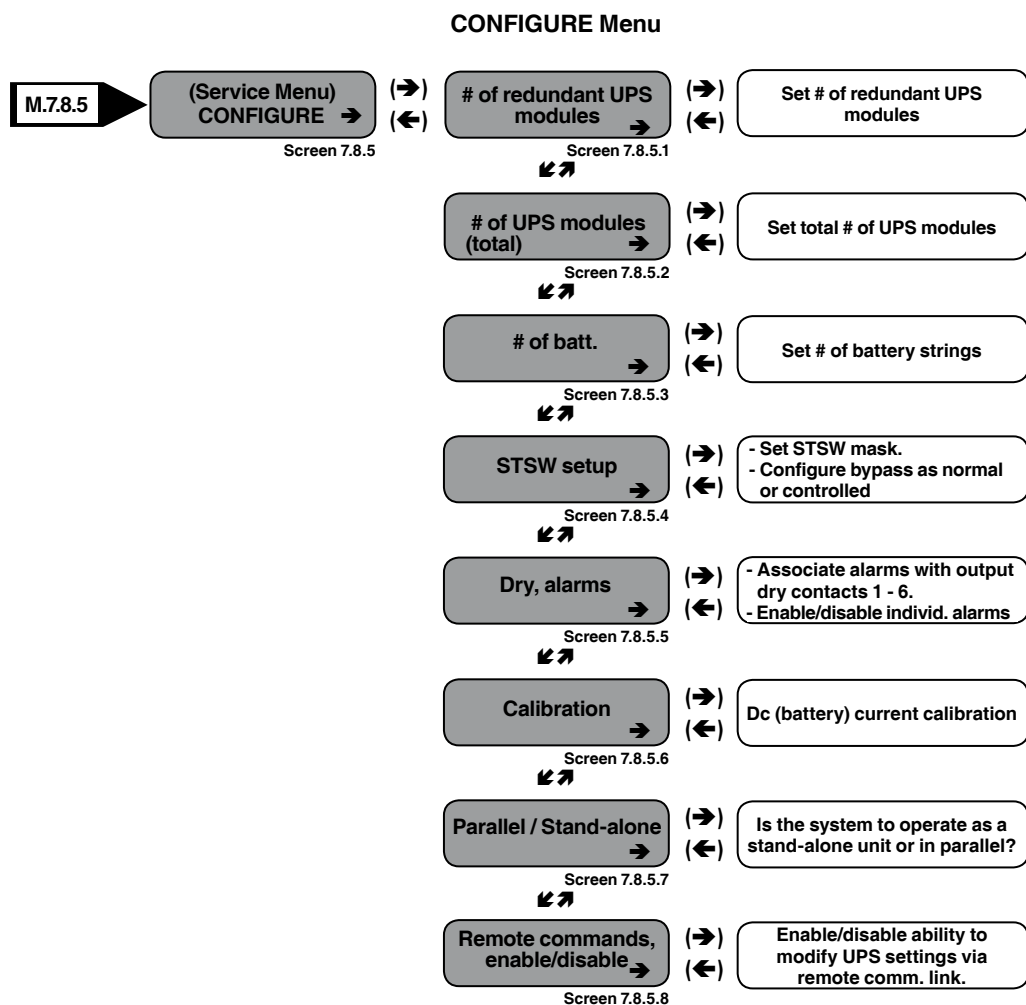


Fig. 93. Configure sub-sub-menu

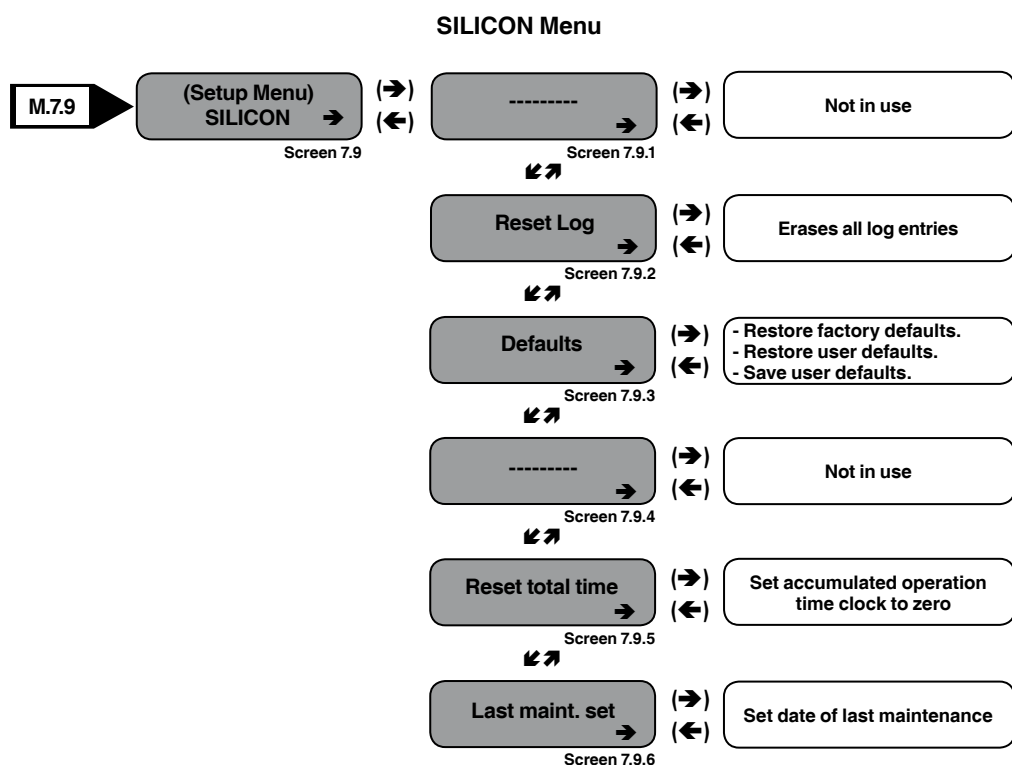


Fig. 94. Silicon sub-menu

10. UPS Menu functions in detail

This chapter describes the functions available through the **SLC ADAPT** Main Menu and its submenus.

Note: If you are viewing this file in PDF format, it is possible to search for text in the displayed screens. This eases finding the desired screen.

10.1. Main Menu

Press the Enter button (**Ent**) to display the main menu.

Note: To return to the main menu at any time, press the Escape button (**Esc**) and then **Ent**.

```

1> SYSTEM      4> HISTORY  7> SETUP
2> UPS MODULE  5> BATTERY  8> STATIC SW
3> SELFTEST    6> ALARM   9> _____
NAVIGATE: <UP, DOWN> 1 SELECT: <ENTER>
  
```

Fig. 95. Main Menu

1>	SYSTEM	General information such as voltages, currents etc.
2>	UPS MODULE	Information for a specific UPS module.
3>	SELFTEST	Self checking of the Controller's components (supply, RTC, memory).
4>	HISTORY	History log events (last 255 events, dated and timed).
5>	BATTERY	Charging / discharging voltages and currents, battery test etc.
6>	ALARM	Detailed alarm status.
7>	SETUP	Configuring the system (number of modules, alarm, time etc.).
8>	STATIC SW	Static Switch data.

Table 10. Main Menu Options

10.2. "System" Option

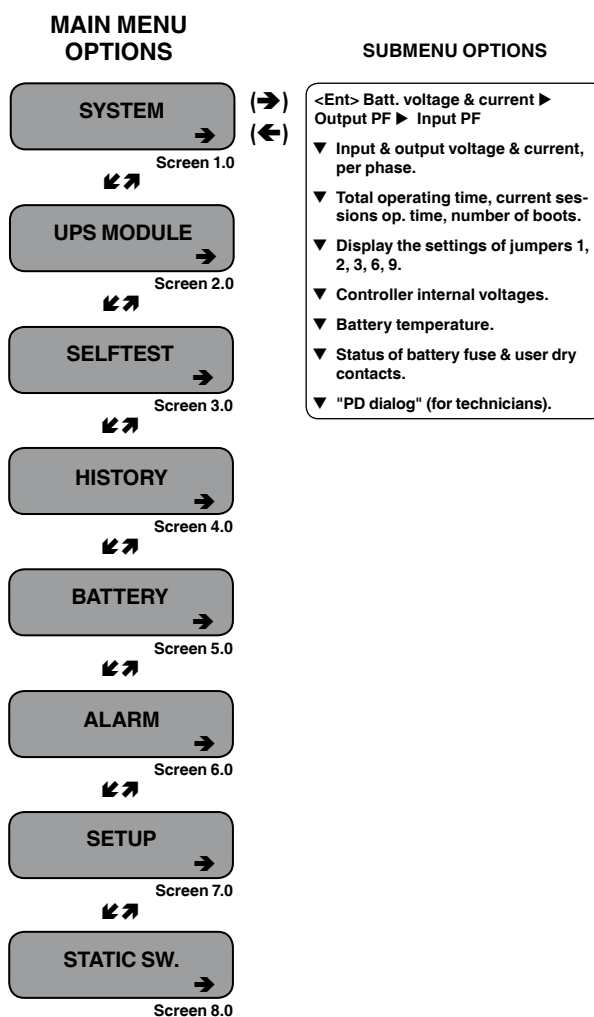


Fig. 96. Main menu option 1 ("System")

1. The SYSTEM option (option 1) shows the dc voltages and current (positive, negative and summary):

[Main Menu > SYSTEM]

```

BATT CURR: ----> TOTAL +053.0A
BATT POS.: 430V  BATT +053.2A (0531)
BATT NEG.: 441V
BATT VOLT: 871V
  
```

Fig. 97. System dc voltages

2. View the current output power factors:

[Main Menu > SYSTEM > ►]

OUTPUT	L1	L2	L3	TOTAL
KVA	000.4	000.2	000.2	000.8
KW	000.0	000.0	000.0	000.0
P.F.	0.00	0.00	0.00	0.00

Fig. 98. Output power factor 1

3. View the current input power factor:

[Main Menu > SYSTEM > ►►►]

INPUT	L1	L2	L3	TOTAL
KVA	001.5	001.5	001.5	004.5
KW	000.0	000.0	000.0	000.0
P.F.	1.00	1.00	1.00	0.00

Fig. 99. Input power factor 1

4. View the three-phase input and output total voltage and current:

[Main Menu > SYSTEM > ▼]

PHASE:	-L1--	-L2--	-L3--
IN:	230V/022.0A	231V/022.0A	235V/021.0A
OUT:	230V/021.0A	230V/021.0A	230V/021.0A
----- TOTAL UPS IN/OUT MEASUREMENTS -----			

Fig. 100. Overall phase voltages/currents

5. View the total time, current session time, and boots so far:

[Main Menu > SYSTEM > ▼▼]

TOTAL	TIME: 19771 HOURS
CURRENT SESS.:	13075 HOURS
BOOTS SO FAR:	00010 TIMES

Fig. 101. Elapsed time

6. View the system jumper settings without remote panel:

[Main Menu > SYSTEM > ▼▼▼]

JMP:	JMP1, JMP2, JMP3, JMP6 and JMP9
●=IN	1. NOT HARD SILICON
○●●●	2. SILICON MODE 6. NO RMT PAN.
12369	3. CAPACITY LOW 9. AC: 230V

Fig. 102. Jumper settings WITHOUT remote panel

7. View the system jumper settings with remote panel:

[Main Menu > SYSTEM > ▼▼▼▼]

JMP:	JMP1, JMP2, JMP3, JMP6 and JMP9
●=IN	1. NOT HARD SILICON
○●○●	2. SILICON MODE 6. Remote pan.
12369	3. CAPACITY LOW 9. AC: 230V

Fig. 103. Jumper settings WITH remote panel

Note: In and , “Silicon mode” indicates that the configuration jumper is installed, thus allowing for modifications. “Hard Silicon” indicates that the factory defaults hard reset jumper is installed. This is required only at the factory or whenever software reset fails. Refer to section for a detailed description of jumpers.

8. View the internal controller voltages:

[Main Menu > SYSTEM > ▼▼▼▼]

5VDC : 5.19V	CONTROLLER INTERNAL
12VDC: 12.01V	VOLTAGES
5VP : GOOD	
5V2 : GOOD	-12VDC: GOOD

Fig. 104. Internal controller voltages

9. View battery parameters:

[Main Menu > SYSTEM > ▼▼▼▼▼]

BATTERY CHARGE LEVEL:	010Ah	050%
WHILE TOTAL CAPACITY:	020Ah	
REMAINING BACKUP:	0010	MINUTES
BATTERY TEMPERATURE:	12°C	

Fig. 105. Battery parameters

Note: : The data displayed in depends on the options installed and configured. See and .

10. View status of the fuses:

[Main Menu > SYSTEM > ▼▼▼▼▼▼]

BATT FUSE:	BAD	EMERGENCY:	OPEN
USER-1:	OPEN	USER-4:	OPEN
USER-2:	OPEN	7:	OPEN
USER-3:	OPEN	8:	OPEN

Fig. 106. Fuse status

11. View communication with the converter in the transmit mode (for Technicians):

[Main Menu > SYSTEM > ▼▼▼▼▼▼▼]

PD DIALOG: UPS	#01
T>c0 42 00 00 d8 00 00 00 00 00 00 00 00 00	
00 00 00 00 00 00 aa	

Fig. 107. Communication with inverter – transmit

12. View communication with the converter in the receive mode (for Technicians):

[Main Menu > SYSTEM > ▼▼▼▼▼▼▼▼]

R<e0e0 0900 0003 0003 0003 e874 1074	
1074 2f37 5362 0000 0200 0100 0310	
f077 0000 0000 0000 0000 0000 0000	
0000 0000 0000 0000 52	52

Fig. 108. Communication with inverter – receive

13. Press **Ent** to return to the Main Menu ().

10.3. “UPS module” Option

To view voltage and current measurements and other information for each UPS module:

1. Use the ▼ and ▲ keys to scroll between UPS modules. The display shows the voltage and current measurements for each module (see).
2. Scroll ► and ◀ keys to view additional information for the specific module chosen.

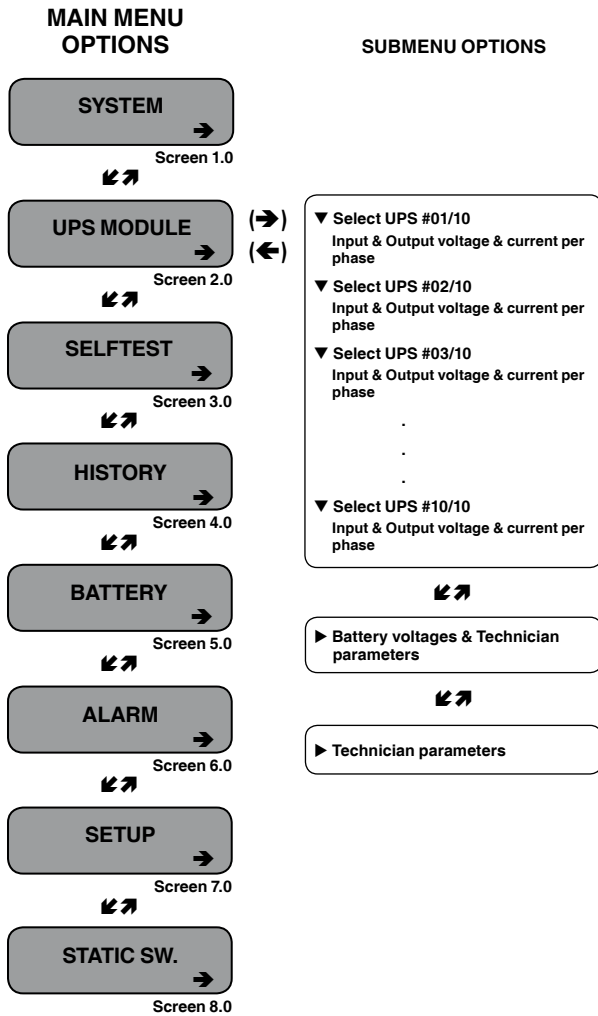


Fig. 109. Main Menu option 2 (“UPS Module”)

1. The first screen to appear after selecting the UPS Module:

[Main Menu > UPS MODULE]

Next screens show data on all UPSs. Use up, down arrow keys to select a UPS. Use left, right arrow keys to view different UPS parameters.

Fig. 110. LCD Panel – select a UPS

2. View the input and output voltage and current for each phase of a particular UPS module. Scroll down ▼ to view other UPS modules.

[Main Menu > UPS MODULE > ▼]

```
PHASE:  -L1--      -L2--      -L3-
IN:    000V/000.0A  000V/000.0A  000V/000.0A
OUT:    000V/000.0A  000V/000.0A  000V/000.0A
UPS:#  01/04
```

Fig. 111. Module phase voltages/currents

3. View the battery voltage for the selected UPS module (the parameters I-ACTIVE and I-BUS are for a technician only).

[Main Menu > UPS MODULE > ▼ > ►]

```
BATT  VOLT  I-ACTIVE      I- BUS
BATT+: 216V  L1    000      L1  000
BATT-: 216V  L2    000      L2  000
UPS: #01/04 L3    000      L3  000
```

Fig. 112. Battery voltages & technician parameters

10.4. “Self-test” Option

You can run a self-test at any time without interfering in the normal operation of the **SLC ADAPT**. A self-test is also initiated by the **SLC ADAPT** itself each day at midnight.

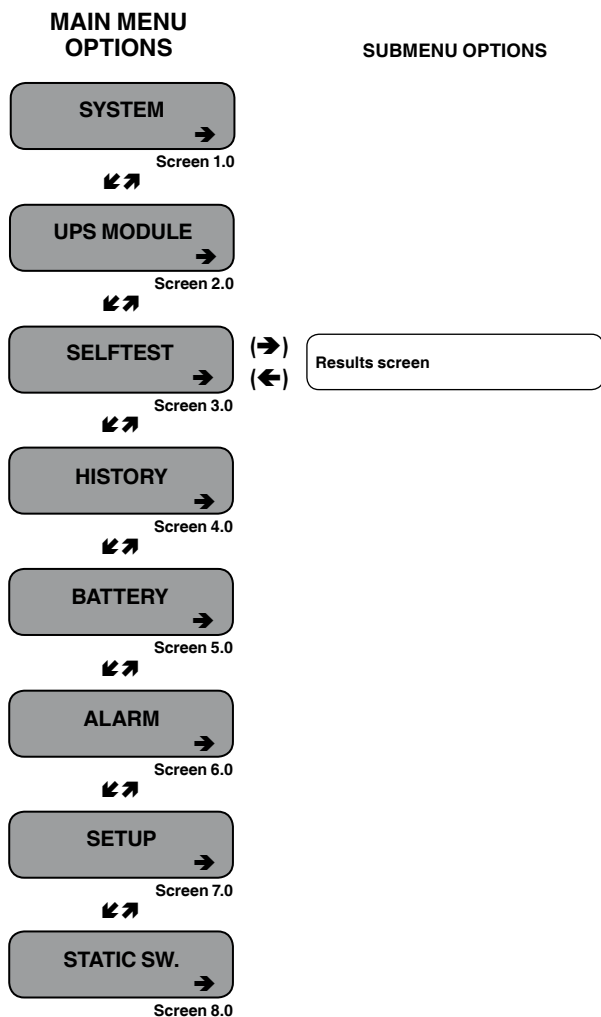


Fig. 113. Main Menu option 3 (“Self Test”)

The failure of a self-test sets on the self-test alarm. The self-test alarm can only be cleared by a subsequent successful self-test, or it can be cleared manually by a maintenance technician.

Powering the **SLC ADAPT** down and up, for example, does not clear the self-test alarm. This is because the failure of a self-test is considered a serious event that should not be “forgotten”. A self-test failure is also recorded in the alarm log.

[Main Menu > SELFTEST]

```
Wait for results...
STATIC RAM: PASSED   R.T   CLOCK: PASSED
EEPROM - 1: PASSED
EEPROM - 3: PASSED   DC SUPPLIES: PASSED
```

Fig. 114. Result screen from self-test

10.5. “History” (logs) Option

The last 255 events reserved in the LOG are displayed, as shown in :

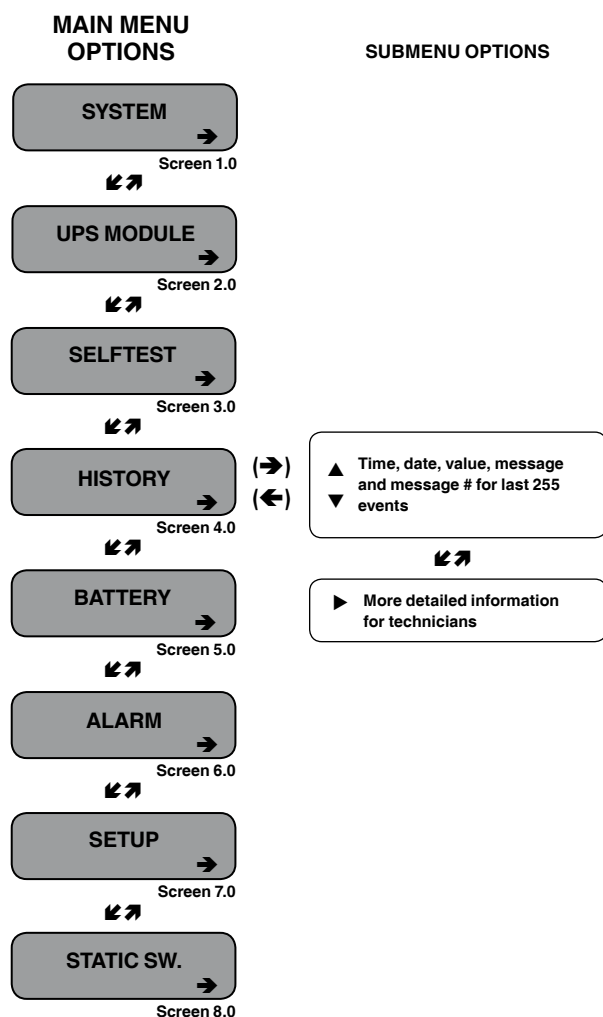


Fig. 115. Main Menu option 4 (“History”)

1. Navigate the LOG by scrolling using the ▲ and ▼ keys:

[Main Menu > HISTORY]

TIME	DATE	VALUE	MESSAGE	#
14:36:16	28.06.07	099.1V	IN->STSWCM	254
14:37:01	28.06.07	502.0V	OUT->OVLOAD	255
12:27:26	27.06.07	120.0V	IN->UPS-CM	000

Fig. 116. History logs

2. View more details by pressing the ► key:

[Main Menu > HISTORY > ►]

TIME	DATE	1	2	3	4	5	6	7	8	#
14:36:16	28.02.10	○	○	○	○	○	○	○	○	254
14:37:01	28.02.10	○	○	○	○	○	○	○	○	255
12:27:26	27.02.10	○	○	○	○	○	○	○	○	000

Fig. 117. History log scroll

#	Message	Explanation
01	UPSMAJ	More than 1 UPS Module is sending an alarm or fault warning
02	UPSMIN	Single UPS Module is sending an alarm or fault warning
03	-----	N.A.
04	-----	N.A.
05	LOADBP	Load is now running on bypass. See Table 12 on page 78 to interpret the LOADBP value.
06	VIBRA_	Alarm(s) vibrating. Alarm is frequently raised and lowered. Ignore to avoid loading the log filling up.
07	OVTEMP	Excess temperature
08	OUTFLT	No ac output to load
09	BAT-HI	Excessive battery voltage
10	-----	N.A.
11	BATEND	End of battery backup. Battery is discharged to shutdown limit
12	BATLOW	Low battery voltage
13	STSWRN	Static Switch Warning or alarm
14	E.P.O.	Emergency Power Off is active
15	EQ-HST	Battery is currently charging in equalizing mode, dc voltage is temporarily increased
16	BATFLT	Batteries failed last test
17	USER-1	User 1 input open
18	USER-2	User 2 input open
19	USER-3	User 3 input open
20	AC-BRN	Input ac supply Brown Out
21	ACIN_H	Ac input excessive
22	ACFAIL	Ac input failure
23	STSWCM	Static Switch does not respond
24	SLFFLT	Last controller self-test failed
25	BAT-CB	Battery Circuit Breaker Open
26	CURSHR	Current Sharing fault, load current is not equally divided between modules
27	UPSOUT	Fault (no current) in 1 or more output stage
28	UPSHDN	UPS shutdown by EPO, Battery Discharge, ON/OFF pressed
29	OVLOAD	Load current is high
30	UPS-CM	One or more UPS's not responding
31	STRTUP	Startup time-stamp
32	-----	N.A.

Table 11. Log Messages

Each message is formatted as follows:

- Time – HH:MM:SS
- Date – YY:MM:DD

Data – dc voltage between + and – terminals for all events except LOADBP and STSW status for LOADBP events. (See below.)

Even start (IN) and end (OUT).

Description – (See above).

Event number – 0 through 255, 255 being the most recent.

Example:

11:23:56 10.01.28 865 IN → E.P.O. 254.

This message means that at 11:23:56 on January 28th 2010, Emergency Power Off alarm was registered as event 254; dc voltage at the time was 865 V being a sum of (V+ -N) and (V- -N).

The STSW transfer code, given as a decimal, is the sum of the eight components listed in this table. Each component has its own weight if detected, and a weight of zero if not detected.

COMPONENT WEIGHT	CONDITION DESCRIPTION
1	Inverter voltage blackout for >3 ms.
2	Inverter peak voltage low (brownout) (<185 V for 3x400 V, <92.5 V for 3x208 V).
4	Inverter peak voltage high (>400 V for 3x400 V, >200 V for 3x208 V).
8	Frequency beyond limits (45-65 Hz).
16	Inverter average voltage low (<185 V for 3x400 V, <92.5 V for 3x208 V).
32	Inverter average voltage high (>260 V for 3x400 V, >130 V for 3x208 V)..
64	Load transfer command received from the controller (not manual).
128	Load transfer command received from the Static Switch (manual key press).

Example: If LOADBP data = 67 = (64+2+1), this means that three conditions were present:

- (64) Instruction to transfer the load was issued by the controller.
- (2) Low peak voltage detected.
- (1) Voltage blackout encountered.

Table 12. Interpreting the Static Switch transfer code (LOADBP)

10.6. “Battery” Option

The battery option on the main menu displays information about battery capacity, battery voltage and current, and battery test.

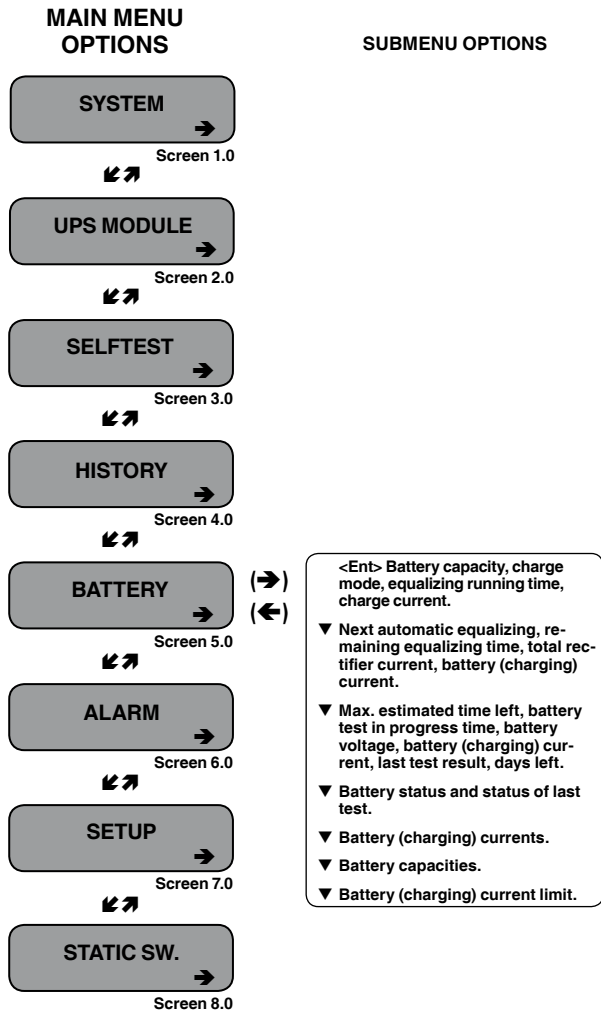


Fig. 118. Main Menu option 5 (“Battery”)

1. View the battery capacity, charge mode, equalizing running time, and charge current:

[Main Menu > BATTERY]

```
Battery capacity: 0020Ah
Charge mode      : Floating
Eq. running time: -----
Charge current   : 053.0A
```

Fig. 119. Battery status

2. View next automatic equalizing, remaining equalizing time, total rectifier current, and battery (charging) current:

[Main Menu > BATTERY > ▼]

```
Next automatic equalizing: 02 days
Remaining equalizing time: ___ minutes
Rectifiers total current  : 0050A
Battery current           : 053.0A
```

Fig. 120. Battery equalizing

- View the maximum estimated time left, battery test in progress time, battery voltage, battery (charging) current, last test result, and days left:

[Main Menu > BATTERY > ▼ > ▼]

```
Max/estim time left : 00:00:00 /--:--:--
Battery test in progress for: 00:00:00
Batt. volt: 860.0V  Batt.current: 008
Last test: PASSED    Days left: 027
```

Fig. 121. Time left

- View battery status and status of the last test:

[Main Menu > BATTERY > ▼ > ▼ > ▼]

```
1> Battery#1: PASSED  Last test: PASSED
```

Fig. 122. Last test

- View battery (charging) current:

[Main Menu > BATTERY > ▼ > ▼ > ▼ > ▼]

```
Batt1 curr: 052.1A  Batt curr: 052.1A
```

Fig. 123. Battery current

- View battery capacity:

[Main Menu > BATTERY > ▼ > ▼ > ▼ > ▼ > ▼]

```
1> Battery#1: 020 Ah Total Cap.: 0020 Ah
```

Fig. 124. Battery capacity

Nota: , and show the individual batteries on the left and the overall total on the right. In the examples shown above, only one battery is installed..

- View battery (charging) current limit:

[Main Menu > BATTERY > ▼ > ▼ > ▼ > ▼ > ▼ > ▼]

```
1> Battery#1: Current limit: 53A
```

Fig. 125. Battery current limit

10.7. “Alarm” Option

Alarms are displayed—there are 32 in all. In addition, there are some screens for use by a technician.

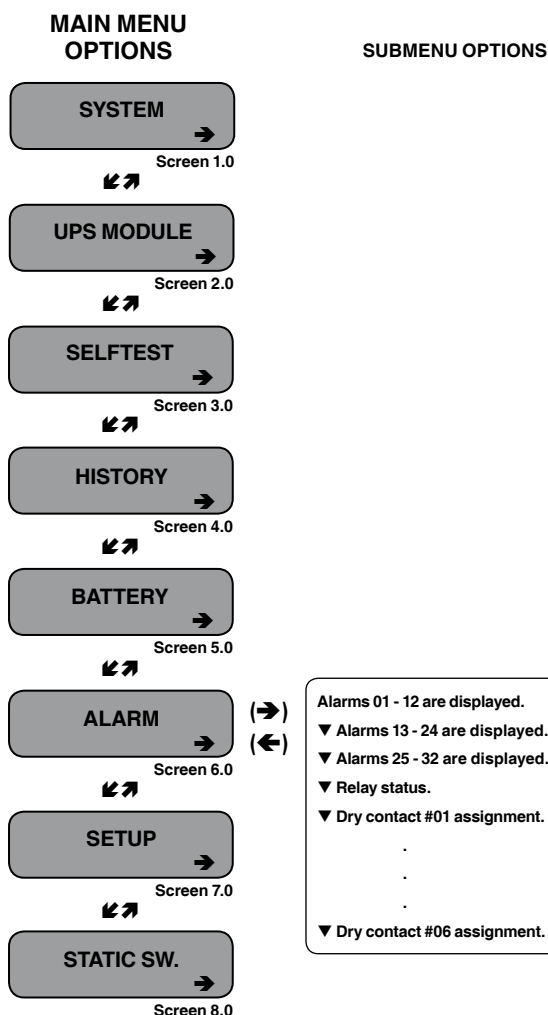


Fig. 126. Main Menu option 6 (“Alarm”)

- View alarms 01-12:

A + or – before an alarm name indicates the alarm is enabled or disabled, respectively.

An asterisk (*) after an alarm name indicates that the alarm is active.

[Main Menu > ALARM]

```
01 - 03  +UPSM AJ:*  +UPSM IN:  +MSTR>1:
04 - 06  +DCR PCY:  +LOADBP:  -VIBRA-:
07 - 09  +OVTEMP:  +OUTFLT:  +BAT-HI:
10 - 12  +-----:  +BATEND:  +BATLOW:
```

Fig. 127. Alarms 01-12

2. View alarms 13-24:

[Main Menu > ALARM > ▼]

13 - 15	+STSWRN:	+E.P.O.:	* -EQ-HST:
16 - 18	+BATFLT:	* +USER-1:	-USER-2:
19 - 21	+USER-3:	+AC-BRN:	+ACIN-H:
22 - 24	+ACFAIL:	+STSWCM:	* +SLFFLT:

Fig. 128. Alarms 13-24

3. View alarms 25-32:

[Main Menu > ALARM > ▼ > ▼]

25 - 27	+BAT-CB:	+CURSHR:	* -UPSOUT:
28 - 30	+UPSHDN:	* +OVLOAD:	-UPS-CM:
31 - 32	+STRTUP:	+USER-4:	

Fig. 129. Alarms 25-32

10.8. “Setup – Alarm Set” Option

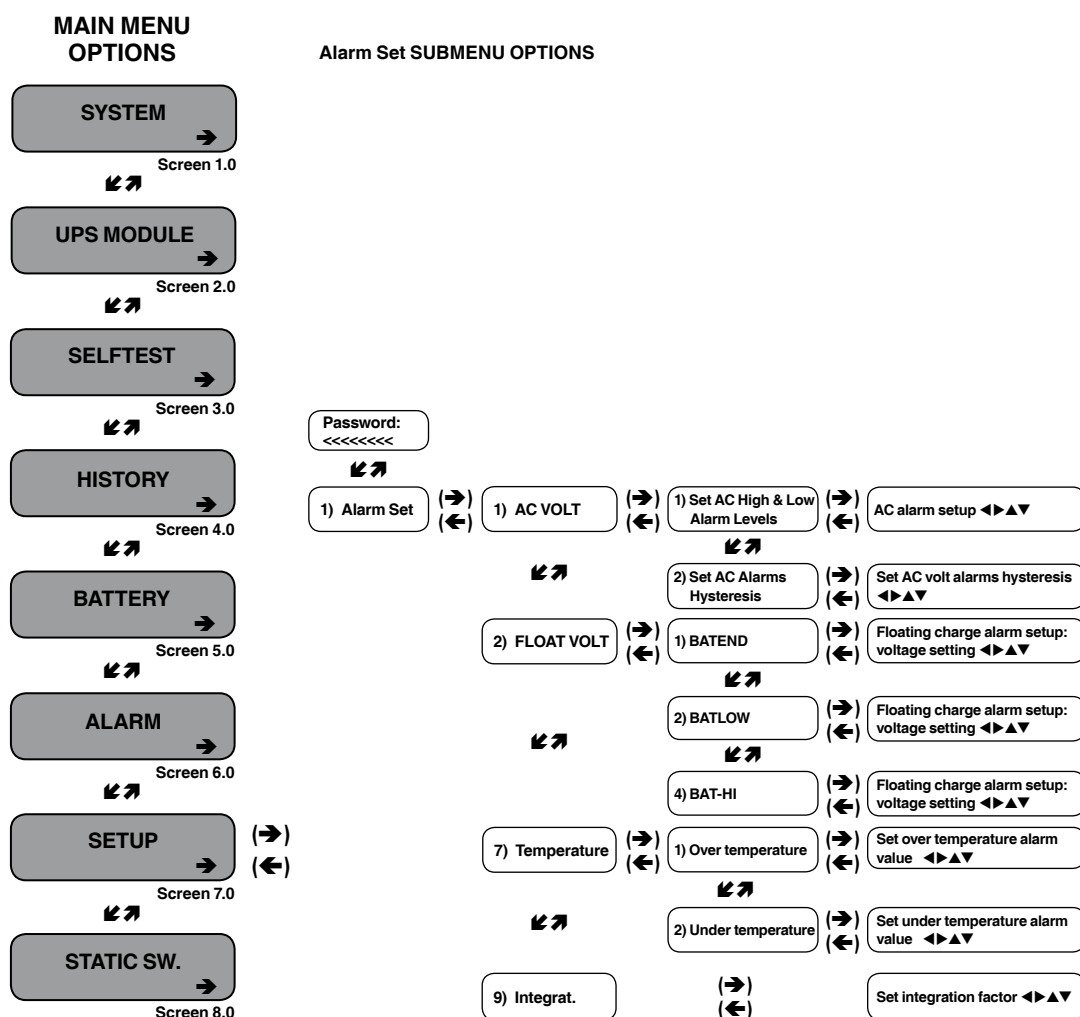


Fig. 130. Main Menu option 7 (“Setup – Alarm Set”)

- To enter Setup, use the default password <<<<<<<<<<<< (left arrow key eight times).

[Main Menu > SETUP]

```

POWER+ System Setup
Type in Level-1 PASSWORD, THEN - ENTER
Your privilege will expire after 15 min.
PASSWORD:_____

```

Fig. 131. Level 1 password access

- Select Alarm set:

[Main Menu > SETUP > (password) > Ent]

```

1> Alarm Set      5> Time      9> Silicon
2> Module Conf.  6> Site
3> Battery       7> Password #1
4> Charge        8> Service      1

```

Fig. 132. Setup menu

10.8.1. Setting Ac Voltage Alarms

- Select **AC VOLT**:

[Main Menu > SETUP > (password) > ALARM SET]

```

1> AC VOLT      5> ----- 9>INTEGRAT.
2> FLOAT VOLT  6> -----
3> -----     7> TEMPERATURE
4> -----     8> -----

```

Fig. 133. Alarm setup menu

- Select **Set AC High & Low Alarm Levels**:

[Main Menu > SETUP > Ent > (password) > Ent > ALARM SET > AC VOLT]

```

1> SET AC HIGH & LOW ALARM LEVELS
2> SET AC ALARMS HYSTERESIS

```

PLEASE SELECT

1

Fig. 134. Ac alarms menu

- Use the arrow keys to update values and press **Ent**:

[Main Menu > SETUP > Ent > (password) > Ent > ALARM SET > AC VOLT > Set AC High & Low Alarm Levels]

```

AC VOLT SETUP:  NOMINAL  220/230 VAC
----- AC ALARM SETUP -----
AC-LOW          AC-HIGH
185V            286V

```

Fig. 135. Set ac alarm voltage levels

- Select **Set AC Alarms Hysteresis**:

[Main Menu > SETUP > Ent > (password) > Ent > ALARM SET > AC VOLT]

```

1> SET AC HIGH & LOW ALARM LEVELS
2> SET AC ALARMS HYSTERESIS

```

PLEASE SELECT

1

Fig. 136. Ac alarms menu

- Use the arrow keys to set value, press **Ent**, and then **Esc**:

[Main Menu > SETUP > Ent > (password) > Ent > ALARM SET > AC VOLT > Set AC Alarms Hysteresis]

```

SET AC VOLT ALARMS HYSTERESIS VALUE
(1 - 20) VOLT

```

05

Fig. 137. Set ac voltage hysteresis

10.8.2. Setting Battery Floating Voltage Alarm

- Select **FLOAT VOLT**:

[Main Menu > SETUP > (password) > ALARM SET]

```

1> AC VOLT      5> ----- 9>INTEGRAT.
2> FLOAT VOLT  6> -----
3> -----     7> TEMPERATURE
4> -----     8> -----

```

Fig. 138. Alarm set menu

- Select **BATEND**:

[Main Menu > SETUP > (password) > ALARM SET > FLOAT VOLT]

```

1> BATEND
2> BATLOW
3> -----
4> BAT-HI          SELECT ITEM:1

```

Fig. 139. Battery floating charge alarm setup menu

- Use the arrow keys to set **BATEND** and press **Ent**:

[Main Menu > SETUP > (password) > ALARM SET > FLOAT VOLT > BATEND]

```

FLOATING CHARGE ALARM SETUP
VOLTAGE SETTING: 340.0V

```

Fig. 140. Set BATEND

4. Select **BATLOW**:

[Main Menu > SETUP > (password) > ALARM SET > FLOAT VOLT]

```

1> BATEND
2> BATLOW
3> -----
4> BAT-HI                SELECT ITEM:1

```

Fig. 141. Battery floating charge alarm setup menu5. Use the arrow keys to set **BATLOW** and press **Ent.**:

[Main Menu > SETUP > (password) > ALARM SET > FLOAT VOLT > BATLOW]

```

FLOATING CHARGE ALARM SETUP
VOLTAGE SETTING: 360.0V

```

Fig. 142. Set BATLOW6. Select **BAT-HI**:

[Main Menu > SETUP > (password) > ALARM SET > FLOAT VOLT]

```

1> BATEND
2> BATLOW
3> -----
4> BAT-HI                SELECT ITEM:1

```

Fig. 143. Battery floating charge alarm setup menu7. Use the arrow keys to set **BAT-HI**, press **Ent.**, and then **Esc.**:

[Main Menu > SETUP > (password) > ALARM SET > FLOAT VOLT > BAT-HI]

```

FLOATING CHARGE ALARM SETUP
VOLTAGE SETTING: 475.0V

```

Fig. 144. Set BAT-HI

10.8.3. Setting Battery Over/Under Temperature Alarms

1. Select **TEMPERATURE**:

[Main Menu > SETUP > (password) > ALARM SET]

```

1> AC VOLT      5> ----- 9>INTEGRAT.
2> FLOAT VOLT  6> -----
3> -----      7> TEMPERATURE
4> -----      8> -----

```

Fig. 145. Alarm set menu2. Select **OVER TEMPERATURE**:

[Main Menu > SETUP > (password) > ALARM SET > Temperature]

```

1> OVER TEMPERATURE
2> UNDER TEMPERATURE
PLEASE SELECT

```

Fig. 146. Over/Under temperature menu3. Use the arrow keys to set the battery maximum temperature alarm value and press **Ent.**:

[Main Menu > SETUP > (password) > ALARM SET > Temperature > OVER TEMPERATURE]

```

SET OVER TEMPERATURE ALARM VALUE
( 2 - 99) DEGREES
45

```

Fig. 147. Set battery maximum temperature alarm4. Select **UNDER TEMPERATURE**:

[Main Menu > SETUP > (password) > ALARM SET > Temperature]

```

1> OVER TEMPERATURE
2> UNDER TEMPERATURE
PLEASE SELECT

```

Fig. 148. Over/Under temperature menu5. Use the arrow keys to set the battery minimum temperature alarm value, press **Ent.**, and then **Esc.**:

[Main Menu > SETUP > (password) > ALARM SET > Temperature > UNDER TEMPERATURE]

```

SET OVER TEMPERATURE ALARM VALUE
( 2 - 99) DEGREES
45

```

Fig. 149. Set battery minimum temperature alarm

10.8.4. Setting Battery Integration Alarm

The **Alarm Integration Factor** determines the number of times that the controller polls and retries to determine the UPS status before deciding on an error status. Setting the alarm integration factor too low will cause spurious alarms to be generated; conversely, setting the alarm integration factor too high may result in an alarm only being raised when it is already too late to take corrective action.

1. Select **INTEGRAT.**:

[Main Menu > SETUP > (password) > ALARM SET]

1> AC VOLT	5> -----	9>INTEGRAT.
2> FLOAT VOLT	6> -----	
3> -----	7> TEMPERATURE	
4> -----	8> -----	

Fig. 150. Alarm set menu

2. Use the arrow keys to set the integration factor alarm value—press **Ent** to accept or **Esc** to discard:

[Main Menu > SETUP > (password) > ALARM SET > INTEGRAT.]

SET INTEGRATION FACTOR		
(1 - 30)		
ENTER = ACCEPT	05	ESC = DISCARD

Fig. 151. Set the integration factor alarm

10.9. “Setup – Module Conf.” Option

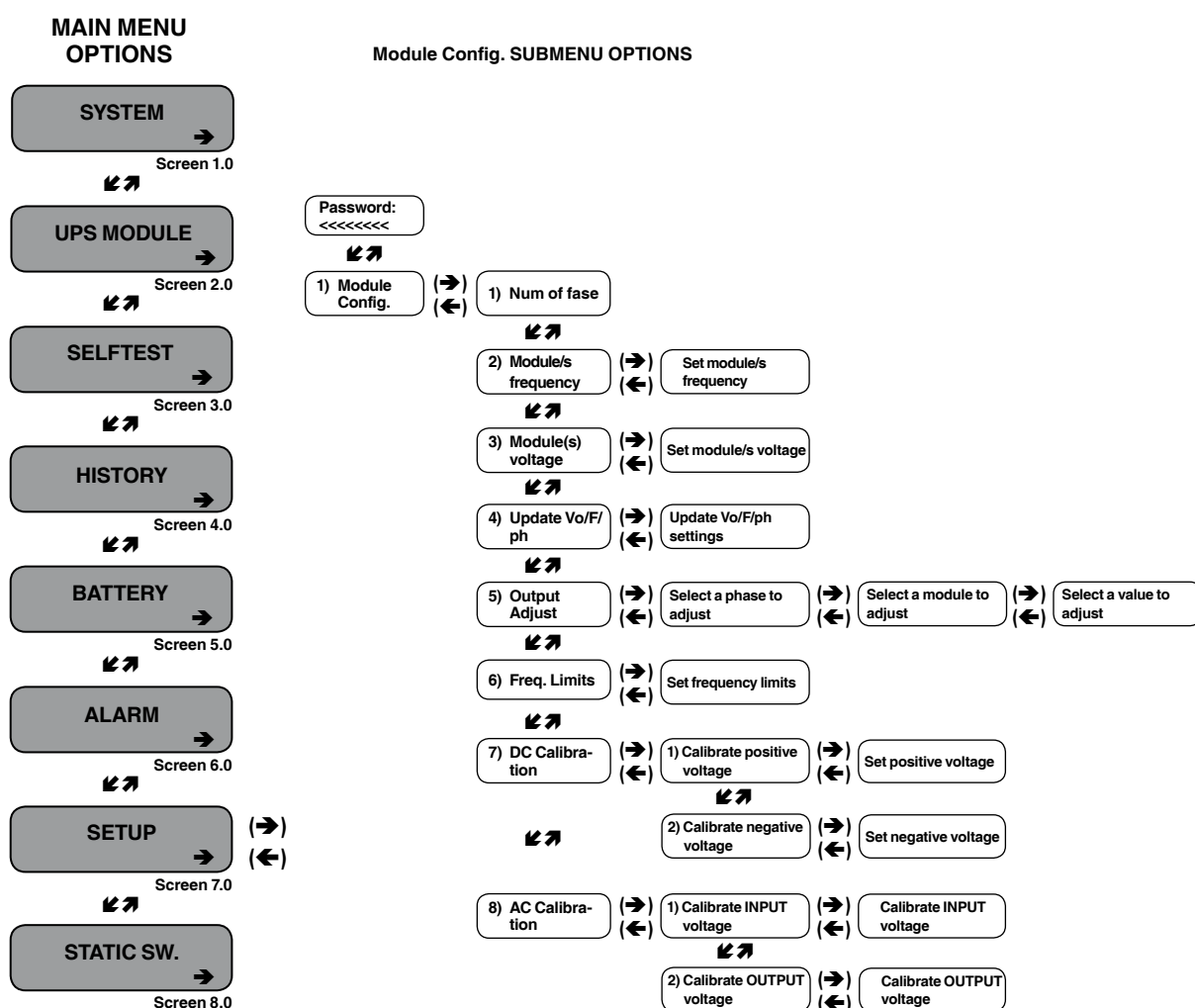


Fig. 152. Main Menu option 7 (“Setup – Module Conf.”)

1. To enter **Setup**, use the default password <<<<<<<<<<<< (left arrow key eight times).

[Main Menu > SETUP]

```

POWER+ System Setup
Type in Level-1 PASSWORD, THEN - ENTER
Your privilege will expire after 15 min.
PASSWORD:_____

```

Fig. 153. Level 1 password access

2. Select **Module conf.**:

[Main Menu > SETUP > (password) > Ent]

```

1> Alarm set      5> Time      9> Silicon
2> Module conf.  6> Site
3> Battery       7> Password #1
4> Charge        8> Service

```

Fig. 154. Setup menu

10.9.1. Setting Number of Phases

1. Select **Num of phase**:

[Main Menu > SETUP > (password) > Module conf.]

```

1. Num of phase      5.Output Adjust
2. Module/s frequency 6.Frequency Limits
3. Module/s voltage  7.DC Calibration
4. Update Vo/Fr/ph   8.AC Calibration

```

Fig. 155. Module Config. setup menu

10.9.2. Setting Module/s Frequency

1. Select **Module/s frequency**:

[Main Menu > SETUP > (password) > Module conf.]

```

1. Num of phase      5.Output Adjust
2. Module/s frequency 6.Frequency Limits
3. Module/s voltage  7.DC Calibration
4. Update Vo/Fr/ph   8.AC Calibration

```

Fig. 156. Module Config. setup menu

2. Use the ▲▼ arrow keys to set the **module/s frequency**, press **Ent**, and then **Esc**:

[Main Menu > SETUP > (password) > Module conf. > Module/s frequency]

```

---      SET MODULE/S FREQUENCY      ---
SELECT - 1 HARD (DIP DEPEND.)
SELECT - 2 SET 50HZ                    (SELECTED)
SELECT - 3 SET 60HZ

```

Fig. 157. Setting the Module/s frequency

10.9.3. Setting Module/s Voltage

1. Select **Module/s voltage**:

[Main Menu > SETUP > (password) > Module conf.]

```

1. Num of phase      5.Output Adjust
2. Module/s frequency 6.Frequency Limits
3. Module/s voltage  7.DC Calibration
4. Update Vo/Fr/ph   8.AC Calibration

```

Fig. 158. Module Config. setup menu

2. Use the ▲▼ arrow keys to set the **module/s voltage**, press **Ent**, and then **Esc**:

[Main Menu > SETUP > (password) > Module conf. > Module/s voltage]

```

Module/s voltage      4: 235V
1: 220V                5: 240V
2: 225V                6: 250V
3: 230V (selected)    5: 260V

```

Fig. 159. Setting the Module/s voltage

10.9.4. Update Voltage/Frequency/Phase

1. Select **Update Vo/Fr/ph**:

[Main Menu > SETUP > (password) > Module conf.]

```

1. Num of phase      5.Output Adjust
2. Module/s frequency 6.Frequency Limits
3. Module/s voltage  7.DC Calibration
4. Update Vo/Fr/ph   8.AC Calibration

```

Fig. 160. Module Config. setup menu

2. Press **Ent** to update, and then **Esc**:

[Main Menu > SETUP > (password) > Module conf. > Update Vo/Fr/ph]

```

Nominal voltage & Frequency
have been sent to all modules.
Please verify all modules were updated!
Exit this mode by pressing Esc.

```

Fig. 161. Updating the Module/s voltage/frequency/phase

10.9.5. Output Adjustment

1. Select **Output Adjust**:

[Main Menu > SETUP > (password) > Module conf.]

```

1. Num of phase      5.Output Adjust
2. Module/s frequency 6.Frequency Limits
3. Module/s voltage  7.DC Calibration
4. Update Vo/Fr/ph   8.AC Calibration

```

Fig. 162. Module Config. setup menu

2. Select a phase to adjust and press **Ent**..

[Main Menu > SETUP > (password) > Module conf. > Output Adjust]

```

----- Select a phase to adjust -----
Select - 1: L1
Select - 2: L2
Select - 3: L3

```

Fig. 163. Select a phase to adjust

3. Using the **▲▼** keys, select a module to adjust, and then **Ent**..

[Main Menu > SETUP > (password) > Module conf. > Output Adjust > Ent]

```

----- Select a module to adjust -----
                                01
----- Use Up/Down, Enter, or Esc. -----

```

Fig. 164. Select a module to adjust

4. Using the **▲▼** keys select a value to adjust, and then press **Ent**..

[Main Menu > SETUP > (password) > Module conf. > Output Adjust > Ent > Ent]

```

----- Set a value to adjust -----
                                00          Phase: 1
                                Module: 01
----- Use Up/Down, Enter, or Esc. -----

```

Fig. 165. Select a value to adjust

10.9.6. Setting Frequency Limits

1. Select **Frequency Limits**:

[Main Menu > SETUP > (password) > Module conf.]

```

1. Num of phase          5. Output Adjust
2. Module/s frequency    6. Frequency Limits
3. Module/s voltage      7. DC Calibration
4. Update Vo/Fr/ph       8. AC Calibration

```

Fig. 166. Module Config. setup menu

2. Using the **▲▼** keys set the frequency limits, press **Ent**, and then **Esc**:

[Main Menu > SETUP > (password) > Module conf. > Frequency Limits]

```

--- Set frequency limits ---
1: No Change          4: +/- 3Hz
2: +/- 1Hz (slctd)    5: +/- 4Hz
3: +/- 2Hz            6: +/- 0.5Hz

```

Fig. 167. Select the frequency limits

10.9.7. Calibrating DC Voltage

1. Select **DC Calibration**:

[Main Menu > SETUP > (password) > Module conf.]

```

1. Num of phase          5. Output Adjust
2. Module/s frequency    6. Frequency Limits
3. Module/s voltage      7. DC Calibration
4. Update Vo/Fr/ph       8. AC Calibration

```

Fig. 168. Module Config. setup menu

2. Select either **Calibrate Positive Voltage** or **Calibrate Negative Voltage** and then press **Ent**..

[Main Menu > SETUP > (password) > Module conf. > DC Calibration]

```

--- MODULES DC VOLTAGE CALIBRATION ---
SELECT - 1: Calibrate Positive Voltage
SELECT - 2: Calibrate Negative Voltage
Then press ENTER to continue

```

Fig. 169. Calibrate Positive or Negative Voltage

3. Adjust the measured value using the arrow keys, and press **Ent** to update:

[Main Menu > SETUP > (password) > Module conf. > DC Calibration > Ent]

```

MODULE V. CALIB - 15 Sec to expire
##### Press ENTER TO UPDATE #####
MEASURED VALUE: 432.0V

```

Fig. 170. Enter measured value

10.9.8. Calibrating AC Voltage

1. Select **AC Calibration**:

[Main Menu > SETUP > (password) > Module conf.]

```

1. Num of phase          5. Output Adjust
2. Module/s frequency    6. Frequency Limits
3. Module/s voltage      7. DC Calibration
4. Update Vo/Fr/ph       8. AC Calibration

```

Fig. 171. Module Config. setup menu

2. Select either **Calibrate INPUT Voltage** or **Calibrate OUTPUT Voltage** and then press **Ent**..

[Main Menu > SETUP > (password) > Module conf. > AC Calibration]

```

--- MODULES AC VOLTAGE CALIBRATION ---
SELECT - 1: Calibrate INPUT voltage
SELECT - 2: Calibrate OUTPUT voltage
Then press ENTER to continue

```

Fig. 172. Calibrate INPUT or OUTPUT Voltage

- Adjust the measured value using the arrow keys, and press **Ent** to update:

[Main Menu > SETUP > (password) > Module conf. > AC Calibration
> Ent]

```

MODULE V. CALIB - 15 Sec to expire
##### Press ENTER To UPDATE #####
MEASURED VALUE: 240.0V

```

Fig. 173. Enter measured value

10.10. “Setup – Battery” Option

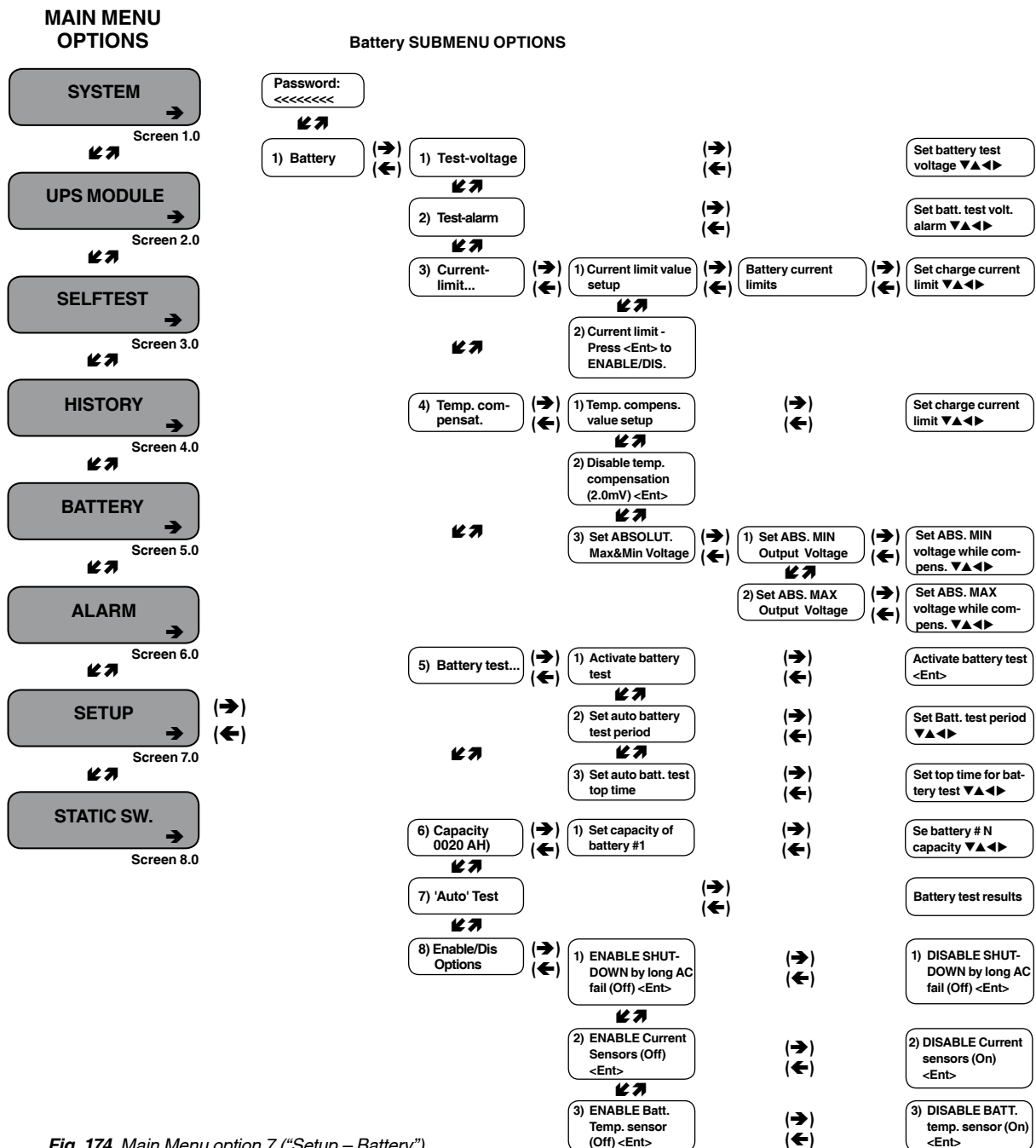


Fig. 174. Main Menu option 7 (“Setup – Battery”)

1. To enter Setup, use the default password <<<<<<<<<<<< (left arrow key eight times).

[Main Menu > SETUP]

```

POWER+ System Setup
Type in Level-1 PASSWORD, THEN - ENTER
Your privilege will expire after 15 min.
PASSWORD:_____

```

Fig. 175. Level 1 password access

2. Select **Battery**:

[Main Menu > SETUP > (password) > Ent]

```

1> Alarm set      5> Time      9> Silicon
2> Module conf.  6> Site
3> Battery        7> Password #1
4> Charge         8> Service

```

Fig. 176. Setup menu

10.10.1. Setting Battery Test Voltage

1. Select **Test-Voltage**:

[Main Menu > SETUP > (password) > Battery]

```

1> Test-Voltage   5> Battery test...
2> Test Alarm     6> Capacity 0020 AH)
3> Current-Limit.. 7> 'AuTo' Test
4> Temp Compensat. 8> Enable/Dis Options

```

Fig. 177. Battery setup menu

2. Using the arrow keys, set the battery test voltage and press **Ent**:

[Main Menu > SETUP > (password) > Battery > Test Voltage]

```

BATTERY (test) VOLTAGE SETUP

VOLTAGE SETTING: 352.0V

```

Fig. 178. Set battery test voltage

10.10.2. Setting Battery Test Voltage Alarm

1. Select **Test Alarm**:

[Main Menu > SETUP > (password) > Battery]

```

1> Test-Voltage   5> Battery test...
2> Test Alarm     6> Capacity 0020 AH)
3> Current-Limit.. 7> 'AuTo' Test
4> Temp Compensat. 8> Enable/Dis Options

```

Fig. 179. Battery setup menu

2. Using the arrow keys, set the battery test voltage alarm and press **Ent**:

[Main Menu > SETUP > (password) > Battery > Test Alarm]

```

BATTERY (TEST) VOLTAGE ALARM      360.0 V

```

Fig. 180. Set battery test voltage alarm

10.10.3. Setting Battery Current Limit

1. Select **Current-Limit**:

[Main Menu > SETUP > (password) > Battery]

```

1> Test-Voltage   5> Battery test...
2> Test Alarm     6> Capacity 0020 AH)
3> Current-Limit.. 7> 'AuTo' Test
4> Temp Compensat. 8> Enable/Dis Options

```

Fig. 181. Battery setup menu

2. Select **Current Limit Value Setup** and press **Ent**:

[Main Menu > SETUP > (password) > Battery > Current Limit]

```

1> Current Limit Value Setup
2> Current Limit - Press to ENABLE
Press '2' to Toggle Enable / Disable

```

Fig. 182. Current Limit setup menu

3. Select the current limit for each battery and press **Ent**:

[Main Menu > SETUP > (password) > Battery > Current Limit > Ent]

```

1> Set C. Limit of Battery #1 (99A)

```

Fig. 183. Current limit indication for (each) battery

4. Using the arrow keys, set the current limit for each battery. After the current limit is set for all batteries, press **Esc**:

[Main Menu > SETUP > (password) > Battery > Current Limit > Ent > Ent]

```

CHARGE CURRENT LIMIT SETUP

CURRENT    LIMIT:  99A

```

Fig. 184. Set Current limit for (each) battery

10.10.4.Enable/Disable Battery Current Limit

1. Select **Current-Limit**:

[Main Menu > SETUP > (password) > Battery]

```
1> Test-Voltage      5> Battery test...
2> Test Alarm       6> Capacity 0020 AH)
3> Current-Limit.. 7> 'AuTo' Test
4> Temp Compensat. 8> Enable/Dis Options
```

Fig. 185. Battery setup menu

2. Select **Current Limit Value Setup** and press **Ent.**:

[Main Menu > SETUP > (password) > Battery > Current Limit]

```
1> Current Limit Value Setup
2> Current Limit - Press to ENABLE
Press '2' to Toggle Enable / Disable
```

Fig. 186. Current Limit setup menu

3. Select **Current Limit – Press to ENABLE** and press **Ent** to toggle ENABLE/DISABLE:

[Main Menu > SETUP > (password) > Battery > Current Limit]

```
1> Current Limit Value Setup
2> Current Limit - Press to ENABLE
Press '2' to Toggle Enable / Disable
```

```
1> Current Limit Value Setup
2> Current Limit - Press to DISABLE
Press '2' to Toggle Enable / Disable
```

Fig. 187. Enable/Disable current limit

10.10.5. Setting Temperature Compensation

1. Select **Temp Compensat**:

[Main Menu > SETUP > (password) > Battery]

```
1> Test-Voltage      5> Battery test...
2> Test Alarm       6> Capacity 0020 AH)
3> Current-Limit.. 7> 'AuTo' Test
4> Temp Compensat. 8> Enable/Dis Options
```

Fig. 188. Battery setup menu

2. Select **Temperature compensation Value Setup** and press **Ent.**:

[Main Menu > SETUP > (password) > Battery > Temp Compensat.]

```
1> Temperature Compensation Value Setup
2> Disable Temp. Compensation (2.0 mV)
3> Set ABSOLUTE Max & Min Voltages 1
Press '2' to toggle enable / disable
```

Fig. 189. Temperature compensation setup menu

3. Use the arrow keys to set the temperature compensation and press **Ent.**:

[Main Menu > SETUP > (password) > Battery > Temp Compensat. >Ent]

```
Temperature Compensation Setup
                2.0 - 4.0
Compensate      : 2.0 mV/°C (Per Cell)
```

Fig. 190. Set temperature compensation

10.10.6. Setting Disable Temperature Compensation

1. Select **Temp Compensat**:

[Main Menu > SETUP > (password) > Battery]

```
1> Test-Voltage      5> Battery test...
2> Test Alarm       6> Capacity 0020 AH)
3> Current-Limit.. 7> 'AuTo' Test
4> Temp Compensat. 8> Enable/Dis Options
```

Fig. 191. Battery setup menu

2. Select **Enable Temp. Compensation** and press **Ent** to toggle enable/disable:

[Main Menu > SETUP > (password) > Battery > Temp.Compensat.]

```
1> Temperature Compensation Value Setup
2> Enable Temp. Compensation ( OFF)
3> Set ABSOLUTE Max & Min Voltages 1
Press '2' to toggle enable / disable
```

```
1> Temperature Compensation Value Setup
2> Disable Temp. Compensation (2.0 mV)
3> Set ABSOLUTE Max & Min Voltages 1
Press '2' to toggle enable / disable
```

Fig. 192. Enable/Disable temperature compensation

10.10.7. Setting Absolute Maximum and Minimum Voltages

1. Select **Set ABSOLUTE Max & Min Voltages**:

[Main Menu > SETUP > (password) > Battery > Temp. Compensat.]

```
1> Temperature Compensation Value Setup
2> Enable Temp. Compensation      ( OFF)
3> Set ABSOLUTE Max & Min Voltages 1
Press '2' to toggle enable / disable
```

Fig. 193. Select Set ABSOLUTE Max & Min Voltages

2. Select **Set absolute minimum output voltage**:

[Main Menu > SETUP > (password) > Battery > Temp. Compensat.
> Set ABSOLUTE Max & Min Voltages]

```
1> Set absolute minimum output voltage
2> Set absolute maximum output voltage
---= Active in floating mode only ==--
Please select.                        1
```

Fig. 194. Select Set absolute minimum output voltage

3. Using the arrow keys, set the absolute minimum voltage when compensating and then press **Ent.**:

[Main Menu > SETUP > (password) > Battery > Temp. Compensat.
> Set ABSOLUTE Max & Min Voltages > Absolute MINimum Voltage
While Cmpensat.]

```
Absolute minimum voltage while cmpensat.
voltage setting: 720.0v
```

Fig. 195. Set absolute minimum output voltage when compensating

4. Select **Set absolute maximum output voltage**:

[Main Menu > SETUP > (password) > Battery > Temp. Compensat.
> Set ABSOLUTE Max & Min Voltages]

```
1> Set absolute minimum output voltage
2> Set absolute maximum output voltage
---= Active in floating mode only ==--
Please select.                        1
```

Fig. 196. Select Set absolute maximum output voltage

5. Using the arrow keys, set the absolute maximum voltage when compensating, press **Ent.**, and then **Esc**:

[Main Menu > SETUP > (password) > Battery > Temp. Compensat.
> Set ABSOLUTE Max & Min Voltages > Absolute MAXimum
Voltage While Cmpensat.]

```
Absolute maximum voltage while cmpensat.
voltage setting: 870.0v
```

Fig. 197. Set absolute maximum output voltage when compensating

10.10.8. Activating the Battery Test

1. Select **Battery test**:

[Main Menu > SETUP > (password) > Battery]

```
1> Test-Voltage      5> Battery test...
2> Test Alarm        6> Capacity 0020 AH)
3> Current-Limit..  7> 'AuTo' Test
4> Temp Compensat.  8> Enable/Dis Options
```

Fig. 198. Battery setup menu

2. Select **Activate Battery Test...** and press **Ent.**:

[Main Menu > SETUP > (password) > Battery > Battery test...]

```
1> Activate battery test...
2> Set auto battery test period
3> Set auto battery test top time      1
```

Fig. 199. Select Activate Battery Test...

3. Press **Ent** to start/stop test, and then press **Esc**:

[Main Menu > SETUP > (password) > Battery > Battery test...]

```
Max/estim. Time left: 05:27:00 /--:--:--
Battery test in progress for: 00:00:00
Batt. volt: 864V Batt. Current: ---
Press 'Enter' to start.
```

Fig. 200. Activate battery test

10.10.9. Setting the Automatic Battery Test Period

1. Select **Battery test**:

[Main Menu > SETUP > (password) > Battery]

```
1> Test-Voltage      5> Battery test...
2> Test Alarm        6> Capacity 0020 AH)
3> Current-Limit..  7> 'AuTo' Test
4> Temp Compensat.  8> Enable/Dis Options
```

Fig. 201. Battery setup menu

2. Select **Set Auto Battery Test Period** and then press **Ent.**:

[Main Menu > SETUP > (password) > Battery > Battery test...]

```
1> Activate battery test...
2> Set auto battery test period
3> Set auto battery test top time      1
```

Fig. 202. Select Set auto battery test period

- Using the arrow keys, set the battery test period and then press **Ent**.

[Main Menu > SETUP > (password) > Battery > Battery test...> Set Auto Battery Test Period]

```
Set batt test period
      (1 - 50) weeks
      --
```

Fig. 203. Set battery test period

10.10.10. Setting the Automatic Battery Test Top Time

- Select **Battery test...**:

[Main Menu > SETUP > (password) > Battery]

```
1> Test-Voltage      5> Battery test...
2> Test Alarm        6> Capacity 0020 AH)
3> Current-Limit..  7> 'AuTo' Test
4> Temp Compensat.  8> Enable/Dis Options
```

Fig. 204. Battery setup menu

- Select **Set Auto Battery Test Top Time** and then press **Ent**:

[Main Menu > SETUP > (password) > Battery > Battery test...]

```
1> Activate battery test...
2> Set auto battery test period
3> Set auto battery test top time
1
```

Fig. 205. Select Set auto battery test top time

- Using the arrow keys, set the battery test top time, and then press **Ent**:

[Main Menu > SETUP > (password) > Battery > Battery test...> Set Auto Battery Test Top Time]

```
Set top time for battery test
      (1 - 9) hours

Enter = accept    05      Esc = discard
```

Fig. 206. Set battery test top time

10.10.11. Setting the Nth Battery Capacity

- Select **Capacity 0020AH**:

[Main Menu > SETUP > (password) > Battery]

```
1> Test-Voltage      5> Battery test...
2> Test Alarm        6> Capacity 0020 AH)
3> Current-Limit..  7> 'AuTo' Test
4> Temp Compensat.  8> Enable/Dis Options
```

Fig. 207. Battery setup menu

- Select **Set Capacity of Battery #1** and then press **Ent**:

[Main Menu > SETUP > (password) > Battery > Capacity 00020AH)]

```
1> Set capacity of battery #1  (020 Ah)
```

Fig. 208. Select Set capacity of battery #1

- Using the arrow keys, set the battery capacity, press **Ent**, and then set the capacity for the next battery, if any:

[Main Menu > SETUP > (password) > Battery > Capacity 00020AH) > Set Capacity of Battery #1]

```
Battery #01  Capacity setup
              10 -990
Capacity      :020 Ah
```

Fig. 209. Set battery capacity

Press **Esc** after setting all battery capacities.

10.10.12. Activating 'Auto' Test

- Select **'AuTo' Test**:

[Main Menu > SETUP > (password) > Battery]

```
1> Test-Voltage      5> Battery test...
2> Test Alarm        6> Capacity 0020 AH)
3> Current-Limit..  7> 'AuTo' Test
4> Temp Compensat.  8> Enable/Dis Options
```

Fig. 210. Battery setup menu

- The test is performed. Press **Ent** when done.

[Main Menu > SETUP > (password) > Battery > 'Auto' Test]

```
Max/estim time left : 00:00:00 /--:--:--
Battery test in progress for: 00:00:00
Batt. volt: 860.0V  Batt.current: 008
Last test: PASSED      Days left: 027
```

Fig. 211. Activated 'Auto' test

10.10.13. Enabling/Disabling Options

- Select **Enable/Dis Options**:

[Main Menu > SETUP > (password) > Battery]

```
1> Test-Voltage      5> Battery test...
2> Test Alarm        6> Capacity 0020 AH)
3> Current-Limit..  7> 'AuTo' Test
4> Temp Compensat.  8> Enable/Dis Options
```

Fig. 212. Battery setup menu

2. Select **ENABLE SHUTDOWN by long AC FAIL (Off)** and press **Ent** to toggle enable/disable:

[Main Menu > SETUP > (password) > Battery > Enable/Dis Options]

1> ENABLE SHUTDOWN by long AC FAIL (Off)
2> ENABLE Current Sensors (Off)
3> ENABLE BATT Temperature sensor (Off)
Select & Press To toggle Enable/Disable

1> DISABLE SHUTDOWN by long AC FAIL(On)
2> ENABLE Current Sensors (off)
3> ENABLE BATT Temperature sensor (off)
Select & Press To toggle Enable/Disable

Note: Option 1 in allows the user to enforce shutdown after a given length of input ac failure, even when the batteries are still fully charged.

Item 2, **ENABLE Current Sensors (Off)** and item 3, **ENABLE BATT Temperature sensor (Off)** in the screens shown in toggle between enable/disable in the same manner as item 1, **ENABLE SHUTDOWN by long AC FAIL (Off)**.

Fig. 213. Enable/Disable shutdown by long AC failure

10.11. "Setup – Charge, Time, Site, and Password" Options

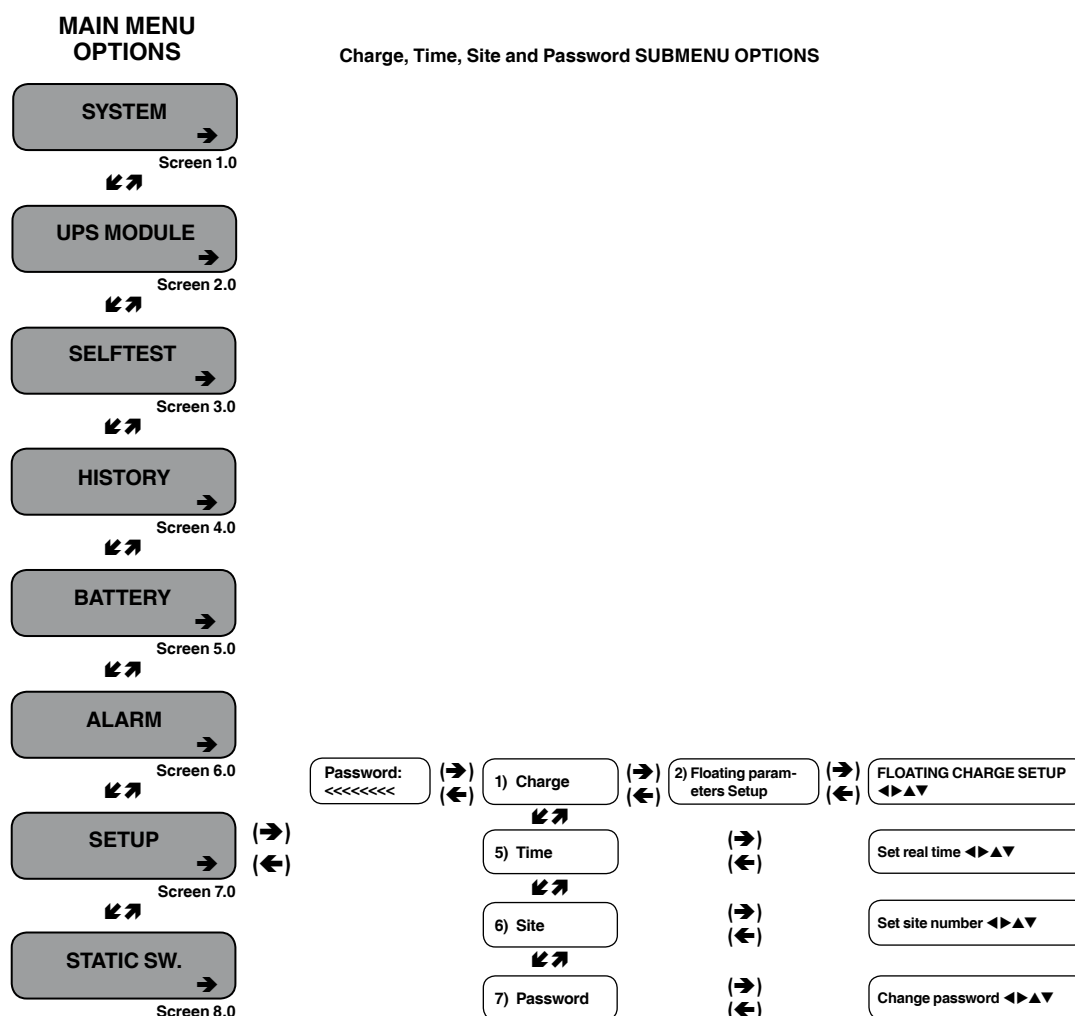


Fig. 214. Main Menu option 7 ("Setup – Charge, Time, Site, & Password")

1. To enter Setup, use the default password <<<<<<<<< (left arrow key eight times).

[Main Menu > SETUP]

```

POWER+ System Setup
Type in Level-1 PASSWORD, THEN - ENTER
Your privilege will expire after 15 min.
PASSWORD:_____

```

Fig. 215. Level 1 password access

2. Using the arrow keys, set the date and time, and then press **Ent**:

[Main Menu > SETUP > (password) > Time]

```

Set real time

Year   Month   Day   Hour   Min   Sec
2011   09      30   23    58   00

```

Fig. 220. Set date and time

10.11.1. Setting the Floating Charge

1. Select **Charge**:

[Main Menu > SETUP > (password) > Ent]

```

1> Alarm set      5> Time      9> Silicon
2> Module conf.  6> Site
3> Battery       7> Password #1
4> Charge        8> Service

```

Fig. 216. Setup menu

2. Select **Floating parameters setup**:

[Main Menu > SETUP > (password) > Charge]

```

1> -----
2> Floating parameters setup.      (Eq:off)
3> -----
4> -----
                                     1

```

Fig. 217. Charge setup menu

3. Using the arrow keys, set the floating charge, press **Ent**, and then press **Esc**:

[Main Menu > SETUP > (password) > Charge > Floating parameters setup.]

```

Floating charge setup

voltage setting: 864.0v

```

Fig. 218. Set floating charge

10.11.2. Setting the Time

1. Select **Time**:

[Main Menu > SETUP > (password) > Ent]

```

1> Alarm set      5> Time      9> Silicon
2> Module conf.  6> Site
3> Battery       7> Password #1
4> Charge        8> Service

```

Fig. 219. Setup menu

10.11.3. Setting the Site Number

1. Select **Site**:

[Main Menu > SETUP > (password) > Ent]

```

1> Alarm set      5> Time      9> Silicon
2> Module conf.  6> Site
3> Battery       7> Password #1
4> Charge        8> Service

```

Fig. 221. Setup menu

2. Use the arrow keys to set the site number, and then press **Ent**:

[Main Menu > SETUP > (password) > Site]

```

Site number: 013271

```

Fig. 222. Set site number

Note: The serial number of Power+ is on a bar-code label at the bottom of the unit, on the left hand side.

10.11.4. Changing the Password

1. Select **Password #1**:

[Main Menu > SETUP > (password) > Ent]

```

1> Alarm set      5> Time      9> Silicon
2> Module conf.  6> Site
3> Battery       7> Password #1
4> Charge        8> Service

```

Fig. 223. Setup menu

2. Use the arrow keys to change the password and press **Ent**, or press **Esc** to abort:

[Main Menu > SETUP > (password) > Password #1]

```

Change password

-----
Press Esc to abort

```

Fig. 224. Change password

10.12. “Setup – Service” Option

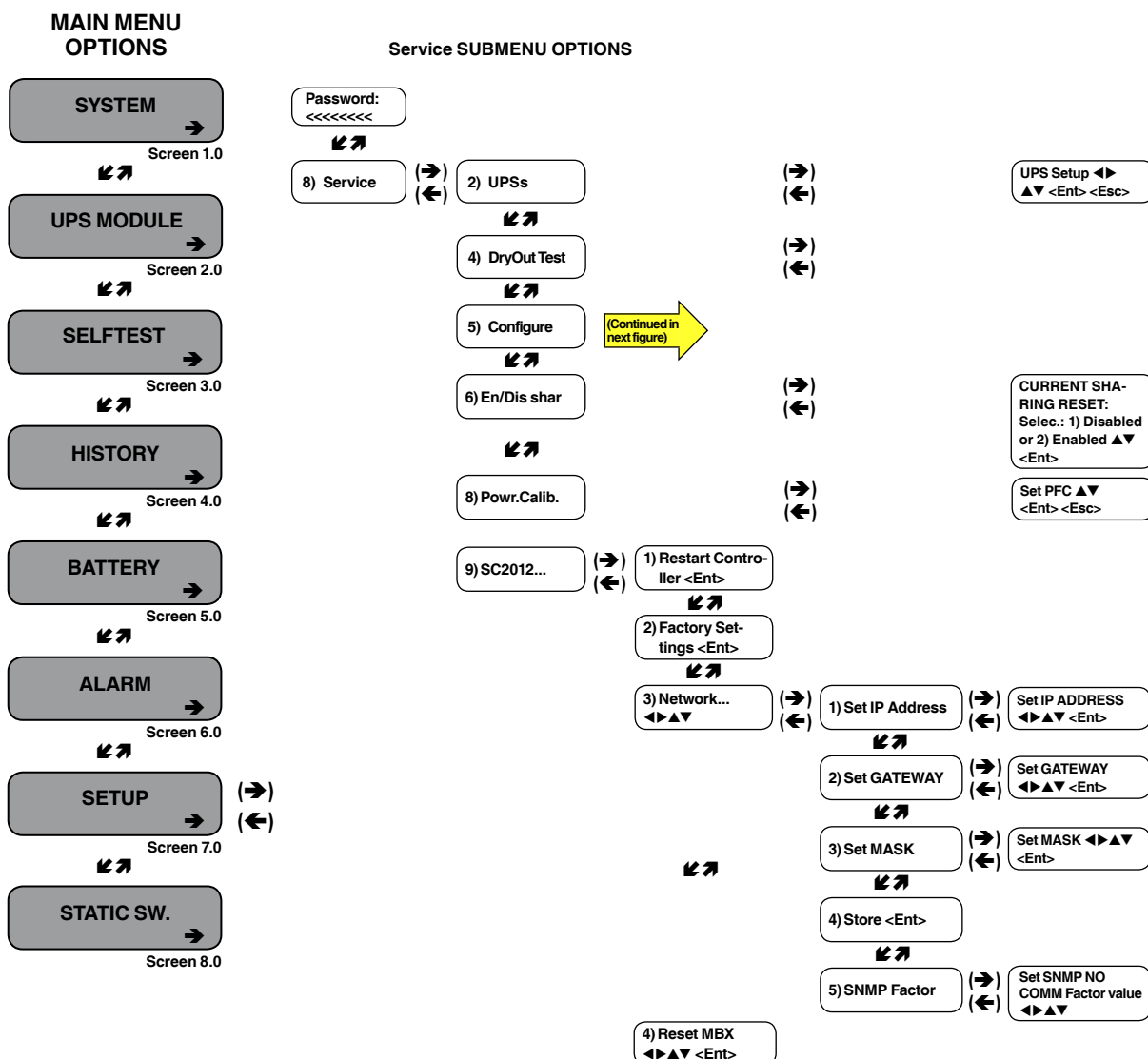


Fig. 225. Main Menu option 7 (“Setup – Service”) 1/2

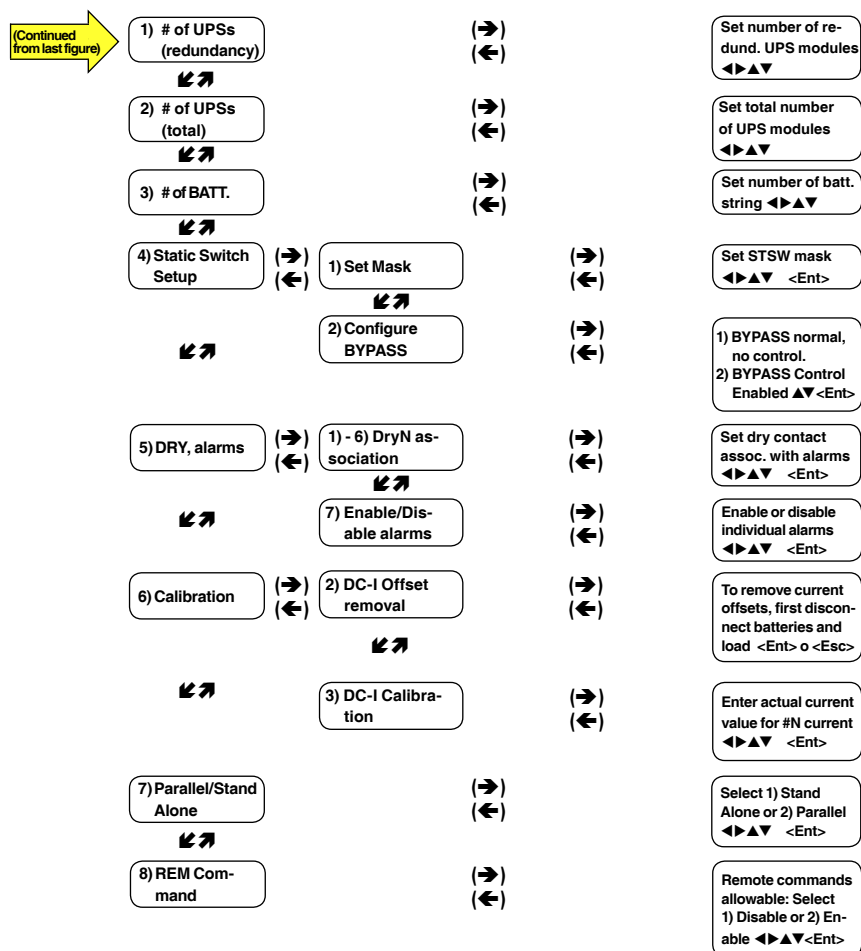


Fig. 226. Main Menu option 7 ("Setup – Service") 2/2

- To enter Setup, use the default password <<<<<<<<<<<< (left arrow key eight times).

[Main Menu > SETUP]

```

POWER+ System Setup
Type in Level-1 PASSWORD, THEN - ENTER
Your privilege will expire after 15 min.
PASSWORD:_____
  
```

Fig. 227. Level 1 password access

- Select **Service**:

[Main Menu > SETUP > (password) > Ent]

```

1> Alarm set      5> Time      9> Silicon
2> Module conf.  6> Site
3> Battery       7> Password #1
4> Charge        8> Service
  
```

Fig. 228. Setup menu

10.12.1. Setting UPSs

- Select **UPSs**:

[Main Menu > SETUP > (password) > Ent > Service]

```

1> ----- 4> DryOut Test 7> -----
2> UPSs    5> Configure  8> Powr.Calib
3> ----- 6> En/Dis shar 9> SC2012..
Select, then Enter
  
```

Fig. 229. Service menu

- Use the arrow keys to set UPSs, and press **Esc** when finished:

[Main Menu > SETUP > (password) > Ent > Service > UPSs]

```

1234
++++
SET UPSs (UP= ON<+>, DOWN= OFF<->)
Enter = Execute      Esc= Go back
  
```

Fig. 230. Set UPSs

10.12.2. Testing Dry Output Relays

1. Select DryOut Test:

[Main Menu > SETUP > (password) > Ent > Service]

```
1> ----- 4> DryOut Test 7> -----
2> UPSS      5> Configure  8> Powr.Calib
3> ----- 6> En/Dis shar 9> SC2012..
Select, then Enter
```

Fig. 231. Service menu

2. Press **▲** slowly to test each relay, and press **Esc** when finished:

[Main Menu > SETUP > (password) > Ent > Service > DryOut Test]

```
Relay status:
Press 'UP' and repeat for relay test(04)
123456          Contacts 1-6
●○○○○○        ●=ON,   ○=OFF
```

Fig. 232. Set UPSs

10.12.3. Configuring the UPS

1. Select Configure:

[Main Menu > SETUP > (password) > Ent > Service]

```
1> ----- 4> DryOut Test 7> -----
2> UPSS      5> Configure  8> Powr.Calib
3> ----- 6> En/Dis shar 9> SC2012..
Select, then Enter
```

Fig. 233. Service menu

10.12.3.1. Number of Redundant UPSs

1. Select # OF UPSs (redundancy):

[Main Menu > SETUP > (password) > Ent > Service > Configure]

```
1> # OF UPSs (redundancy) 5> Dry, Alarms
2> # OF UPSs (total)      6> Calibration
3> # OF BATT              7> Parallel/StandAlone
4> Static Switch Setup    8> REM COMMAND
```

Fig. 234. Service > Configure menu

2. Use the arrow keys to set the number of redundant UPSs and then press **Ent**:

[Main Menu > SETUP > (password) > Ent > Service > Configure > # OF UPSs (redundancy)]

```
Set number of UPSs (Redundancy)

01      (04 total)
```

Fig. 235. Set number of redundant UPSs

10.12.3.2. Total Number of UPSs

1. Select # OF UPSs (total):

[Main Menu > SETUP > (password) > Ent > Service > Configure]

```
1> # OF UPSs (redundancy) 5> Dry, Alarms
2> # OF UPSs (total)      6> Calibration
3> # OF BATT              7> Parallel/StandAlone
4> Static Switch Setup    8> REM COMMAND
```

Fig. 236. Service > Configure menu

2. Use the arrow keys to set the total number of UPSs and then press **Ent**:

[Main Menu > SETUP > (password) > Ent > Service > Configure > # OF UPSs (total)]

```
Set number of UPSs (total)

04      (02 redundant)
```

Fig. 237. Set total number of UPSs

10.12.3.3. Total Number of Batteries

1. Select # OF BATT:

[Main Menu > SETUP > (password) > Ent > Service > Configure]

```
1> # OF UPSs (redundancy) 5> Dry, Alarms
2> # OF UPSs (total)      6> Calibration
3> # OF BATT              7> Parallel/StandAlone
4> Static Switch Setup    8> REM COMMAND
```

Fig. 238. Service > Configure menu

2. Use the arrow keys to set the total number of batteries and then press **Ent**:

[Main Menu > SETUP > (password) > Ent > Service > Configure > # OF BATT]

```
Set Number of Batteries (0 to 3)

02
```

Fig. 239. Set total number of batteries

10.12.3.4. Setting up the Static Switch

1. Select Static Switch Setup:

[Main Menu > SETUP > (password) > Ent > Service > Configure]

```
1> # OF UPSs (redundancy) 5> Dry, Alarms
2> # OF UPSs (total)      6> Calibration
3> # OF BATT              7> Parallel/StandAlone
4> Static Switch Setup    8> REM COMMAND
```

Fig. 240. Service > Configure menu

2. Select **Set mask:**

[Main Menu > SETUP > (password) > Ent > Service > Configure > Static Switch Setup]

1. Set mask
2. Configure BYPASS

Fig. 241. Static Switch setup menu

3. Use arrow keys to set the mask, and then press **Ent**:

[Main Menu > SETUP > (password) > Ent > Service > Configure > Static Switch Setup > Set mask]

Set mask

01

Fig. 242. Set the mask

4. Select Configure BYPASS:

[Main Menu > SETUP > (password) > Ent > Service > Configure > Static Switch Setup]

1. Set mask
2. Configure BYPASS

Fig. 243. Static Switch setup menu

10.12.3.5. Setting up the Dry Alarms

1. Select **Dry, Alarms:**

[Main Menu > SETUP > (password) > Ent > Service > Configure]

```

1> # OF UPSs (redundancy) 5> Dry, Alarms
2> # OF UPSs (total)      6> Calibration
3> # OF BATT              7> Parallel/StandAlone
4> Static Switch Setup    8> REM COMMAND

```

Fig. 244. *Service > Configure menu*

2. Select DryN Association:

[Main Menu > SETUP > (password) > Ent > Service > Configure > DRY, Alarms]

```
1> dry1 association    4> dry4 association
2> dry2 association    5> dry5 association
3> dry3 association    6> dry6 association
7> enable / disable alarms
```

Fig. 245. Dry relay menu

3. Use arrow keys to set associations between dry contacts and alarms, and then press **Ent**:

[Main Menu > SETUP > (password) > Ent > Service > Configure > DRY, Alarms > dry1 association]

```
Associate dry contact #01 with alarm/s
0 0 1 1 2 2 3 3 0=del
1...5...0...5...0...5...0.2 1=add
-----●-----●----- alm#01
```

Fig. 246. Set dry contact N alarm associations

4. Use arrow keys to enable or disable alarms, and then press **Ent.**:

[Main Menu > SETUP > (password) > Ent > Service > Configure > DRY, Alarms > enable / disable alarms]

ENABLE		OR		DISABLE		ALARMS/s		
0	0	1	1	2	2	3	3	0- Dis
1...5...	0...5...	0...5...	0...5...	0...5...	0...5...	0...5...	0...5...	1-Ena
-●●-	-●●●●●●●-	-●--	-●●●●●●-	--●●●●●-	--●●●●●-	--●●●●-	--●●●●-	ALM#01

Fig. 247. Enable / disable alarms

10.12.3.6. Calibrating DC Currents

1. Select Calibration:

[Main Menu > SETUP > (password) > Ent > Service > Configure]

```

1> # OF UPSs (redundancy) 5> Dry, Alarms
2> # OF UPSs (total)      6> Calibration
3> # OF BATT              7> Parallel/StandAlone
4> Static Switch Setup    8> REM COMMAND

```

Fig. 248. *Service > Configure menu*

2. Select **DC-I Offset removal**:

[Main Menu > SETUP > (password) > Ent > Service > Configure > Calibration]

```

1> -----          5> -----
2> DC-I Offset removal 6> -----
3> DC-I Calibration    7> -----
4> -----          Select

```

Fig. 249. DC-I menu

3. Follow screen instructions:

[Main Menu > SETUP > (password) > Ent > Service > Configure > Calibration > DC-I Offset removal]

```
To remove current offsets,  
DISCONNECT BATTERIES and LOAD first,  
Then, press ENTER.  
Else, press Esc.      (0516 0517 0517)
```

Fig. 250. Remove current offsets

4. Select DC-I Calibration:

[Main Menu > SETUP > (password) > Ent > Service > Configure > Calibration]

```

1> -----          5> -----
2> DC-I Offset removal 6> -----
3> DC-I Calibration   7> -----
4> -----                      Select

```

Fig. 251. DC-I menu

5. Press Ent to continue:

[Main Menu > SETUP > (password) > Ent > Service > Configure > Calibration > DC-I Calibration]

```

1> Calibrate Battery #1 Current

```

Fig. 252. Calibrating DC current

6. Using the arrow keys, set the actual current and then press Ent.:

[Main Menu > SETUP > (password) > Ent > Service > Configure > Calibration > DC-I Calibration > Ent]

```

CURRENT METER #01 CALIBRATION
Enter the value of the actual current:

02000 (X0.1)A

```

Fig. 253. Entering actual current

10.12.3.7. Selecting Standalone or Parallel Operation

1. Select Parallel/StandAlone:

[Main Menu > SETUP > (password) > Ent > Service > Configure]

```

1> # OF UPSs (redundancy) 5> Dry, Alarms
2> # OF UPSs (total)      6> Calibration
3> # OF BATT              7> Parallel/StandAlone
4> Static Switch Setup    8> REM COMMAND

```

Fig. 254. Service > Configure menu

2. Select Stand Alone or Parallel by using the ▲▼ arrow keys and Ent.:

[Main Menu > SETUP > (password) > Ent > Service > Configure > Parallel/StandAlone]

```

--- Parallel / Stand-Alone Setup ---
SELECT - 1: Stand Alone      (selected)
SELECT - 2: Parallel

```

Fig. 255. Setting standalone or parallel operation

10.12.3.8. Enabling/Disabling Remote Commands

1. Select REM COMMAND:

[Main Menu > SETUP > (password) > Ent > Service > Configure]

```

1> # OF UPSs (redundancy) 5> Dry, Alarms
2> # OF UPSs (total)      6> Calibration
3> # OF BATT              7> Parallel/StandAlone
4> Static Switch Setup    8> REM COMMAND

```

Fig. 256. Service > Configure menu

2. Enable or disable remote commands by using the ▲▼ arrow keys and Ent.:

[Main Menu > SETUP > (password) > Ent > Service > Configure > REM COMMAND]

```

--- REMOTE COMMANDS EN / DIS ---
SELECT - 1: Disable      (selected)
SELECT - 2: Enable

```

Fig. 257. Enabling/disabling remote commands

10.12.4. Enabling/Disabling Current Sharing

1. Select En/Dis shar:

[Main Menu > SETUP > (password) > Ent > Service]

```

1> ----- 4> DryOut Test 7> -----
2> UPSs     5> Configure   8> Powr.Calib
3> ----- 6> En/Dis shar 9> SC2012..
Select, then Enter

```

Fig. 258. Service menu

2. Enable or disable current sharing by using the ▲▼ arrow keys and Ent.:

[Main Menu > SETUP > (password) > Ent > Service > Configure > En/Dis shar]

```

üüü 1: RST CURRSHAR DISBLD: (selected)
SELECT 2: RST CURRSHAR ENBLD:

--- CURRENT SHARIN RESET EN / DIS ---

```

Fig. 259. Enabling/disabling current sharing

10.12.5. Setting Power Factor Correction (PFC)

1. Select **Powr.Calib**:

[Main Menu > SETUP > (password) > Ent > Service]

```
1> ----- 4> DryOut Test 7> -----
2> UPSS      5> Configure  8> Powr.Calib
3> ----- 6> En/Dis shar 9> SC2012..
Select, then Enter
```

Fig. 260. Service menu

2. Enable or disable power factor correction by using the ▲▼ arrow keys and **Ent**:

[Main Menu > SETUP > (password) > Ent > Service > Configure > Powr.Calib]

```
-- Set power correction factor value --
Current value:      01%
Value to modify:    02%
----- Use Up/down, Enter Or Esc -----
```

Fig. 261. Enabling/disabling power factor correction

10.12.6. Setting the SC2012

1. Select **SC2012**:

[Main Menu > SETUP > (password) > Ent > Service]

```
1> ----- 4> DryOut Test 7> -----
2> UPSS      5> Configure  8> Powr.Calib
3> ----- 6> En/Dis shar 9> SC2012..
Select, then Enter
```

Fig. 262. Service menu

2. Select **Restart controller**:

[Main Menu > SETUP > (password) > Ent > Service > SC2012]

```
1> Restart controller 3> Network...
2> Factory settings  4> Reset MBX
Your selection: 1     5> -----
Enter if you are sure (else press Esc.!)
```

Fig. 263. SC2012 menu

A confirmation screen appears briefly and the controller restarts.

3. Select **Factory settings**:

[Main Menu > SETUP > (password) > Ent > Service > SC2012]

```
1> Restart controller 3> Network...
2> Factory settings  4> Reset MBX
Your selection: 1     5> -----
Enter if you are sure (else press Esc.!)
```

Fig. 264. SC2012 menu

Default settings are implemented, a confirmation screen appears briefly and then the controller restarts.

4. Select **Network**:

[Main Menu > SETUP > (password) > Ent > Service > SC2012]

```
1> Restart controller 3> Network...
2> Factory settings  4> Reset MBX
Your selection: 1     5> -----
Enter if you are sure (else press Esc.!)
```

Fig. 265. SC2012 menu

5. Select **Set IP ADDRESS**:

[Main Menu > SETUP > (password) > Ent > Service > SC2012 > Network]

```
1> Set IP ADDRESS      157.211.000.253
2> Set GATEWAY         157.211.000.251
3> Set MASK            255.255.255.000
4> Store      5> SNMP factor  Select:1
```

Fig. 266. Network menu

6. Use the arrows keys to set an IP address and press **Ent**:

[Main Menu > SETUP > (password) > Ent > Service > SC2012 > Network > Set IP ADDRESS]

```
Set IP ADDRESS

157.211.000.252
```

Fig. 267. Setting an IP address

7. Select **GATEWAY**:

[Main Menu > SETUP > (password) > Ent > Service > SC2012 > Network]

```
1> Set IP ADDRESS      157.211.000.253
2> Set GATEWAY         157.211.000.251
3> Set MASK            255.255.255.000
4> Store      5> SNMP factor  Select:1
```

Fig. 268. Network menu

8. Use the arrows keys to set the gateway and press **Ent**:

[Main Menu > SETUP > (password) > Ent > Service > SC2012 > Network > Set GATEWAY]

```
Set GATEWAY

157.211.000.251
```

Fig. 269. Setting the gateway

9. Select **MASK**:

[Main Menu > SETUP > (password) > Ent > Service > SC2012 > Network]

```
Set MASK

255.255.255.000
```

Fig. 270. Network menu

10. Use the arrows keys to set the mask and press **Ent**:

[Main Menu > SETUP > (password) > Ent > Service > SC2012 > Network > Set MASK]

```
Set MASK
      255.255.255.000
```

Fig. 271. Setting the mask

11. Select **Store**:

[Main Menu > SETUP > (password) > Ent > Service > SC2012 > Network]

```
1> Set IP ADDRESS      157.211.000.253
2> Set GATEWAY         157.211.000.251
3> Set MASK            255.255.255.000
4> Store      5> SNMP factor  Select:1
```

Fig. 272. Network menu

Entered information is stored.

12. Select **SNMP factor**:

[Main Menu > SETUP > (password) > Ent > Service > SC2012 > Network]

```
1> Set IP ADDRESS      157.211.000.253
2> Set GATEWAY         157.211.000.251
3> Set MASK            255.255.255.000
4> Store      5> SNMP factor  Select:1
```

Fig. 273. Network menu

13. Use the arrows keys to set the SNMP NO COMM Factor, press **Ent** and then **Esc**:

[Main Menu > SETUP > (password) > Ent > Service > SC2012 > Network > SNMP factor]

```
Set SNMP NO COMM Factor Value
      (10 - 99)

      50
```

Fig. 274. Setting the SNMP NO COMM factor

14. Select **Reset MBX**:

[Main Menu > SETUP > (password) > Ent > Service > SC2012 > Reset MBX]

```
1> Restart controller 3> Network...
2> Factory settings  4> Reset MBX
Your selection: 1     5> -----
Enter if you are sure (else press Esc.!)
```

Fig. 275. SC2012 menu

The MBX is reset.

10.13. “Setup – “Silicon” Option

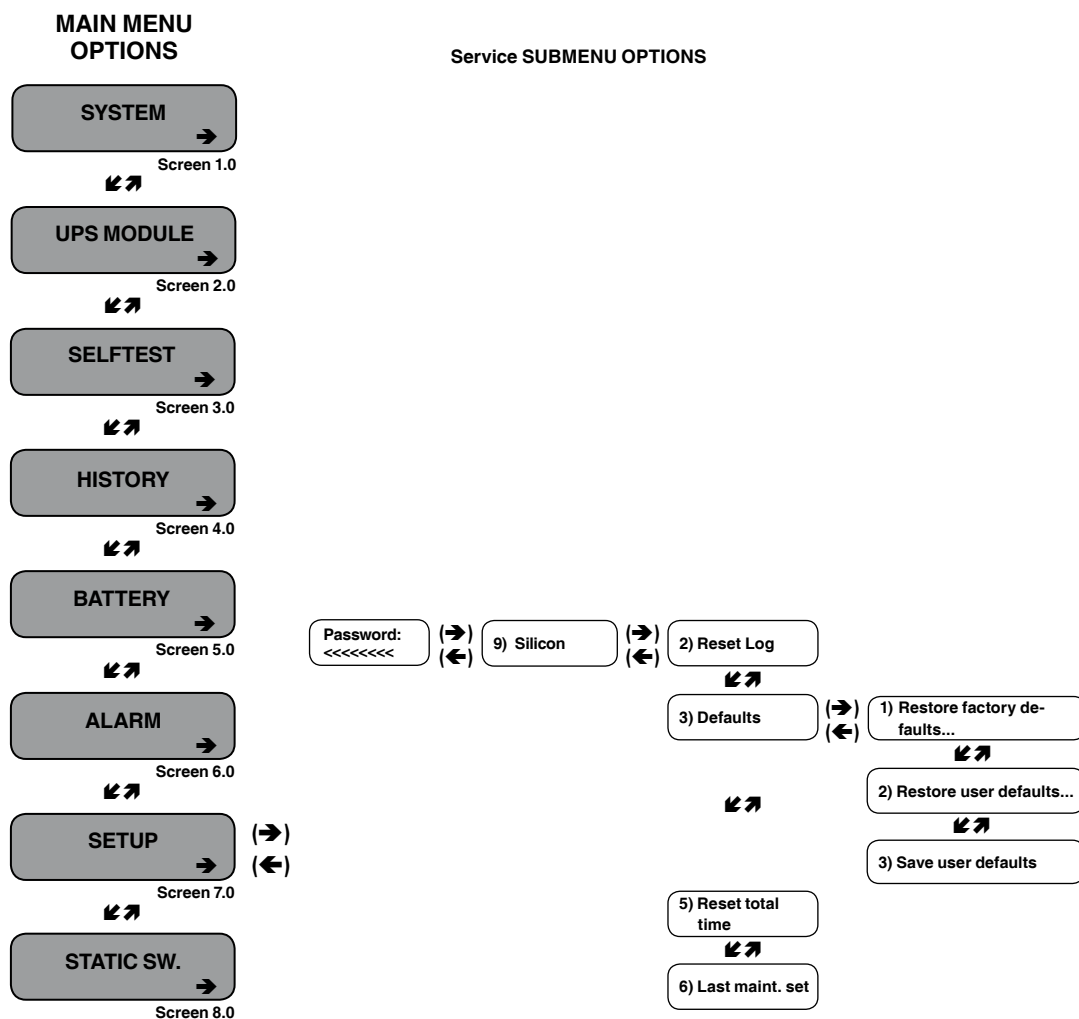


Fig. 276. Main Menu option 7 (“Setup – Static Switch”)

- To enter Setup, use the default password <<<<<<<<< (left arrow key eight times).

[Main Menu > SETUP]

```

POWER+ System Setup
Type in Level-1 PASSWORD, THEN - ENTER
Your privilege will expire after 15 min.
PASSWORD:_____
  
```

Fig. 277. Level 1 password access

- Select **Silicon**:

[Main Menu > SETUP > (password) > Ent]

```

1> Alarm set      5> Time        9> Silicon
2> Module conf.  6> Site
3> Battery       7> Password #1
4> Charge        8> Service
  
```

Fig. 278. Setup menu

- Select **Reset Log** and then **Ent** to clear the log:

[Main Menu > SETUP > (password) > Ent > Silicon]

```

1> -----      5> Reset Total Time
2> Reset Log    6> Last Maint. Set
3> Defaults...
4> -----
  
```

Fig. 279. Silicon menu

- Select **Defaults...**:

[Main Menu > SETUP > (password) > Ent > Silicon]

```

1> -----      5> Reset Total Time
2> Reset Log    6> Last Maint. Set
3> Defaults...
4> -----
  
```

Fig. 280. Silicon menu

5. Select **Restore Factory Defaults...**, **Restore User Defaults...**, or **Save User Defaults...**:

[Main Menu > SETUP > (password) > Ent > Silicon > Defaults...]

```
1> Restore Factory Defaults...
2> Restore User Defaults...
3> Save User Defaults...
Your Selection                      3
```

Fig. 281. Silicon defaults

A confirmation screen appears with the option to go back:

```
Press 'Enter' to proceed OR...
Press 'Esc' to go back
```

Fig. 282. Confirmation screen

6. Select **Reset Total Time** or **Last Maint. Set** if needed:

[Main Menu > SETUP > (password) > Ent > Silicon]

```
1> -----          5> Reset Total Time
2> Reset Log         6> Last Maint. Set
3> Defaults...
4> -----
```

Fig. 283. Silicon menu

10.14. “Static Switch” option

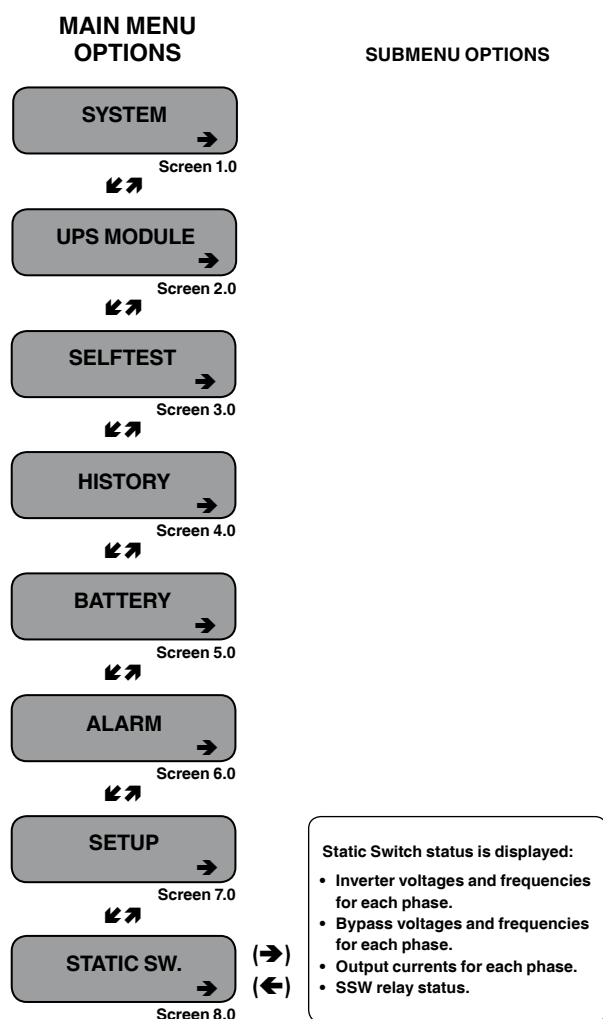


Fig. 284. Static switch option

1. View the static switch voltage and frequency:

[Main Menu > STATIC SW]

SSW	VOLTAGE	FREQ
INVERTER:	L1-120V, L2-120V, L3-120V	60 Hz
BYPASS:	L1-120V, L2-120V, L3-120V	60 Hz
IOUT:	050 050 050	

Fig. 285. Static switch voltage and frequency

2. Press ► to view the current messaging status:

[Main Menu > STATIC SW > ►]

M<-----B3----->L	M<-----B4----->L
1 2 3 4 5 6 7 8	9 10 11 12 13 14 15 16
0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0
SSW STATUS	

Fig. 286. Static switch messaging status

10.15. System Controller Setup Verification

The screens described below are useful for verifying system operation after replacing a controller module(s). Especially important are the screens shown under the General section, as shown in . This verification procedure is available for software versions beginning from 050106.

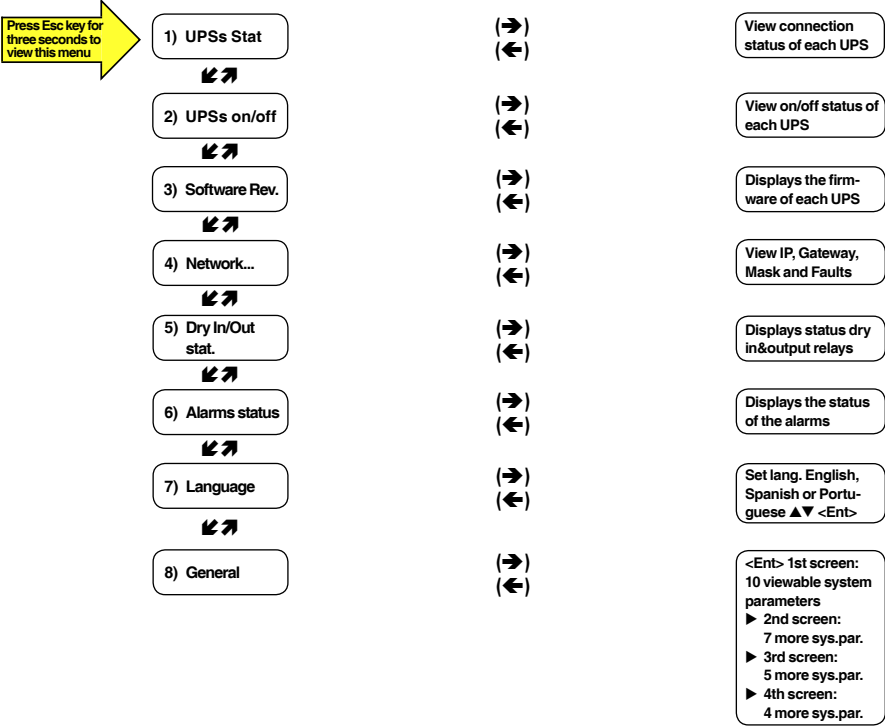


Fig. 287. Setup verification screens

10.15.1. Setup Verification Menu

All of the functions listed below are for monitoring purposes only, except for setting the menu language.

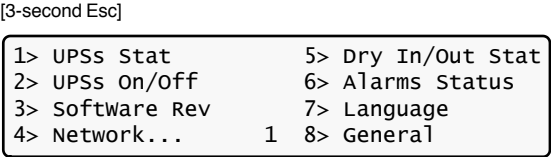


Fig. 288. Setup verification menu

10.15.3. On/Off Status of UPSs

In the screen shown in , UPSs 1 – 3 are on, UPS 4 is off, and UPSs 5 – 9 are non-existent.

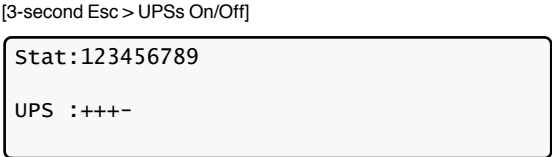


Fig. 290. On/Off status of UPSs

10.15.2. Connection Status of UPSs

In the screen shown in , UPSs 1 and 2 are connected and UPSs 3 and 4 are not connected. UPSs 5 – 9 are non-existent.

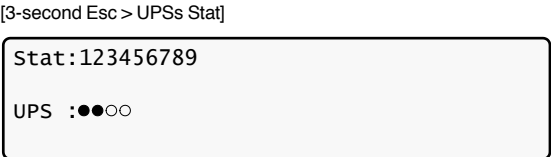


Fig. 289. Connection status of UPSs

10.15.4. Software and Communication Revision

The firmware revision refers to the firmware located on the main **SLC ADAPT** board. The communication revision refers to the communication board revision.

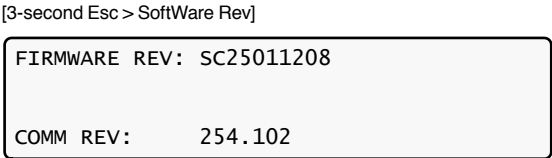


Fig. 291. Software and communication revision

10.15.5. Network Parameters

The network parameters shown below define a specific **SLC ADAPT** unit.

[3-second Esc > Network...]

```
IP          157.211.000.253
Gateway:    157.211.000.251
Mask:       255.255.255.000
Faults:     090,073
```

Fig. 292. Network parameters

10.15.6. Dry Input and Output Relay Contact Status

The input and output contacts for the **SLC ADAPT** are displayed in : input relay contacts 1 and 3 are closed and all other contacts are open. The output contacts are generally used to provide external alarms.

[3-second Esc > Dry In/Out Stat]

```
Dry :12345678
In  :●●●○○○○○
Out :○○○○○○○
```

Fig. 293. Dry input and output relay contact status

10.15.7. Alarms Status

Alarms shown as solid circles are active:

[3-second Esc > Alarms Status]

```
-----System Alarm Status-----
1 ●○○○○○○○○○○○○○○● ●●○○○○●●○○○○●● 32
```

Fig. 294. Alarms status

10.15.8. Setting the Menu Language

Select the desired menu language using the ▲▼ keys and press **Ent**:

[3-second Esc > Language]

```
----- LANGUAGE SETUP -----
SELECT - 1: English           (selected)
SELECT - 2: Spanish
SELECT - 3: Portuguese
```

Fig. 295. Set menu language

10.15.9. System Parameter Settings

User the arrow keys ▲▼ to select General, and then press **Ent**:

[3-second Esc]

```
1> UPSs Stat          5> Dry In/Out Stat
2> UPSs On/Off        6> Alarms Status
3> Software Rev       7> Language
4> Network...         1 8> General
```

Fig. 296. Select General

10.15.9.1. First General Screen

A description of the various system parameters shown in screen 1 are listed below.

[3-second Esc > GENERAL]

```
ACV:220...ALM:242/185    TEMP. ALARM:45C
MODULES:07/02    C.LIM= off , T.C= 2.0mV
DCV:432...ALM:475/360/340
BATT...TEST:04/05/360/352...CAP: 0010 AH
```

Fig. 297. General (Screen 1)

- ACV:** nominal value of the input/output ac voltage (220 for 2x32 batteries; 110 for 2x16 batteries).
- ALM:** input ac voltage alarm HIGH/LOW.
- TEMP. ALARM:** high temperature limit for an external temperature sensor.
- MODULES: QUANTITY/REDUNDANCY:** 07/02 in the screen means that 7 modules are presented in the system, 2 modules are reserve (full load is 10 kVA*(7-2)=50 kVA / 40 kW).
- C.LIM.=off (VALUE):** battery current limit function is de-activated (off) or maximum battery current value in Amps. If C.LIM is activated, the system must be equipped with an optional battery current sensor.
- T.C. = 2.0mV:** negative temperature coefficient of the battery dc voltage in mV per °C per battery cell. Nominal temperature is 25 °C. For dc nominal voltage 432 V , temperature 35 °C, 32 batteries of 6 cells, T.C.= 2 mV, the voltage is 432- 2*6*32*(35-25)~ = 428 V. NOTE. For most applications, T.C. must be 0 (off).
- DCV:** Dc nominal voltage for both positive and negative battery sets. For 32 batteries in the set DCV = 432 V, for 16 batteries 216 V.
- DCV ...ALM:** Dc voltage alarms HIGH/LOW/ SHUTDOWN. SHUTDOWN alarm is dc voltage value when the unit is stopped due to battery discharge.
- BATT....TEST:** PERIOD IN WEEKS/MAX.DURATION IN HOURS/ALARM VOLTAGE/CHARGER DERATED VOLTAGE. In the screen: the test is performed automatically once per 4 weeks, max.

test duration is 5 Hours, if battery voltage drops below 360 V alarm Battery Low is produced, and the chargers for the modules continue to supply a voltage of 352 V to prevent shutdown if battery is faulty.

- j. **CAP:** CAPACITY in Amp-Hours. Used to calculate estimated back-up time of the system and battery test duration.

10.15.9.2. Second General Screen

From the screen shown in the previous section, press ► to view screen 2:

[3-second Esc > GENERAL > ►]

```
CURRSHARE RST: DIS  #OF PHASE:  AUTO
REV : SC25230909    LVD BY AC FAIL: DIS
MAINT: 2010.05.12    TEMP. SENSOR:  DIS
SITE : 000001        CURR. SENSOR:  DIS
```

Fig. 298. General (Screen 2)

A description of the various system parameters shown in screen 2 are listed below.

- a. **CURRSHARE RST:** displays the status of the current sharing—either enabled or disabled (EN or DIS).
- b. **#OF PHASE:** FORCE 3 for 3-phase output, FORCE 1 for single-phase output or AUTO when the mode is defined by DIP SWITCH of the modules.
- c. **REV:** revision of the system controller (SC) software.
- d. **LVD BY AC FAIL:** DIS (disabled) or EN (enabled). This function, if enabled, performs system shutdown after 3 hours of ac failure to prevent deep battery discharge by low current. For most applications, the function must be disabled.
- e. **MAINT:** YEAR.MONTH.DAY: date of last maintenance.
- f. **TEMP. SENSOR:** DIS or EN. External temperature sensor is disabled/ enabled. In most applications, it must be disabled.
- g. **SITE:** the site identification number is used in network applications.
- h. **CURR.SENSOR:** DIS or EN. Optional battery current sensor is disabled/ enabled. In most applications, it must be disabled.

10.15.9.3. Third General Screen

From the screen shown in the previous section, press ► to view screen 3:

[3-second Esc > GENERAL > ► > ►]

```
BOARD JUMPERS SETTING:
1. Not HARD Silicon      6. No Rmt Pan.
2. Silicon Mode          9. AC: 220V
3. CAPACITY HI
```

Fig. 299. General (Screen 3)

A description of the various system parameters shown in screen 3 are listed below:

- a. **Not HARD Silicon:** Must be HARD only initially, during first activation of non-configured controller. After production, it should be Not HARD Silicon.
- b. **Silicon Mode:** Regular mode allowing setup change. The setups are saved in an EEPROM chip.
- c. **CAPACITY HI (LO):** High/low battery capacity mode when battery capacity is more/less than 100 Ah to achieve optimal resolution of the displayed value of battery current.
- d. **No/Yes Rmt Pan:** Outputs of system controller are not configured or configured for an optional remote panel connection.
- e. **AC: 220 V:** Nominal ac input voltage: 220 V for 2x32 batteries, 110 V for 2x16 batteries in series.

10.15.9.4. Fourth General Screen

From the screen shown in the previous section, press ► to view screen 4:

[3-second Esc > GENERAL > ► > ► > ►]

```
SYSTEM OPERATION: STANDALONE MODE
REMOTE COMMANDS:  DISABLE
BYPASS CONTROL:   DISABLE
LINE FREQ./RANGE: AutoHz / 2Hz
```

Fig. 300. General (Screen 4)

A description of the various system parameters shown in screen 4 are listed below.

- a. **SYSTEM OPERATION:** Indicates either standalone or parallel mode.
- b. **REMOTE COMMANDS:** These commands can be enable or disabled.
- c. **BYPASS CONTROL:** This command can be enabled or disabled.
- d. **LINE FREQ./RANGE:** The line frequency control and its variation range is indicated.

11. Web interface

If your **SLC ADAPT** has the remote management software card installed (PC575), you can use the **SLC ADAPT** Web interface and control your **SLC ADAPT** unit from a distance over an Ethernet network using an HTML browser interface.

Note: The built-in Web interface is compatible with Microsoft's Windows operating systems only. For Web access using other computer operating systems, inquire about the PSM-AC for **SLC ADAPT** software product (see section "Optional"). 12

11.1. Preliminaries to use of the Web interface

To enable the **SLC ADAPT** Web interface:

1. Consult with your Network Administrator to obtain an IP address for your **SLC ADAPT**, and the appropriate mask and gateway address.
2. Configure the **SLC ADAPT** with the IP address. This is done from the **SLC ADAPT** main menu as follows:
 - a. **Setup** > (enter your password, then press **Ent**; default password is 8 left arrows) > **Service** > **SC2012** > **Network**.
 - b. From the Network menu, choose **IP Address** and enter the assigned IP address.
 - c. From the Network menu, choose **Gateway** and enter the assigned Gateway address.
 - d. From the Network menu, choose **Mask** and set the assigned subnet mask.
 - e. From the Network menu, choose **Store** to save the information just entered.
3. Connect the **SLC ADAPT** to the local Ethernet network using the Ethernet (RJ45) port on the rear panel of the **SLC ADAPT** controller. This is the port labelled "TCP/IP Port" on the left side of the controller rear panel in the figure below.

4. On a computer terminal, that has connectivity to the **SLC ADAPT** IP address, open a Web browser and enter the **SLC ADAPT** IP address in the URL bar. For example, type **//192.102.2.130** and press Enter. You should see the Web interface main screen (see the figure below).



Fig. 302. Main Screen of the **SLC ADAPT** Web interface



Fig. 301. **SLC ADAPT** controller rear panel

11.2. Main Screen

The Main Screen (see above) is the first screen you see when connecting to the GMaCi software.

The column on the left side of the screen is the Main Menu. The first option in the Main Menu brings you to the Main Screen when you are not already there. The items in the rest of the Main Screen are described in .

ITEM	DESCRIPTION		
System Summary:	Informs you if attention is required or not.		
GSM module status	Cellular (GSM) communication is Available / Not available. A signal-strength indicator is displayed along with the service provider name. Cellular communication requires the Wing module.		
Site number:	The site number is identified.		
Date and time	The current date and time are displayed.		
Refresh:	The time interval at which the display is periodically updated.		
ITEM	DESCRIPTION	✓	✗
UPS image	-	No active alarms at this time.	One or more alarms are active.
Input voltages	The voltage of each input phase is listed.	All input voltages are within range.	One or more of the input phases has a voltage outside of the permitted range.
Static Switch	Load on: Inverter (checkmark) / Bypass ("x")	Load on inverter.	Load on bypass.
Battery mode:	Charging (checkmark) / Discharging ("x")	Battery charged or charging.	Battery discharging or discharged.
Dc voltage	Current battery / charging voltage (Vdc).	Battery voltage in range.	Battery voltage out of range.

Table 13. Main Screen features

11.3. The Main Menu and its options

The Main Menu of **SLC ADAPT** built-in remote management software consists of a column of option buttons on the left side of the Main Screen (see).

lists the options in the Main Menu column on the Main Screen, and describes each option briefly. Each option is described in greater detail in the subsequent sections.

MENU OPTION	DESCRIPTION
Main	Displays a condensed system status: Alarm status and basic readings.
Analysis	Shows real-time readings for each input and output phase: voltage, current, kVA, kW, and power factor.
Modules	Displays status of individual UPS modules, shows input and output ac voltages and currents, dc voltage, and active alarms if any.
STSW	Displays status of Static Switch, including inverter output voltages and frequency, bypass voltages and frequency, and active alarms if any.
Log	Displays system log; data can be printed or exported to an Excel file.
Control	From this screen, the following system commands can be executed: Move load to bypass, move load to inverter, start battery test, abort battery test, LEDs test, shutdown, startup, restart, simulate load on battery condition, simulate battery status is low. Use of this option is disabled by factory default. To enable (or disable), from the Power+ console main menu choose the following: (7) Setup > (8) Service > (5) Config > (8) Rem Command
SMS	View received or sent SMS Messages in this screen from this screen (Wing module must be present). Click Available SMS commands to send an SMS message.
Config.	Configure the settings of the remote management software.

Table 14. Main Menu options

The Main Menu options are described in more detail below.

11.3.1. "Analysis" main menu option

The main menu's "Analysis" option lists current values for voltage, current, apparent power (kVA), active power (kW), and power factor, for each input and output phase.

Main Menu	Input					
Analysis		Voltage	Current	Apparent Power	Active Power	PF
Modules	Line 1	231V	1A	0.2kVA	0.2KW	1.00
STSW	Line 2	236V	1A	0.2kVA	0.2KW	1.00
Log	Line 3	232V	1A	0.2kVA	0.2KW	1.00
Control	Summary			0.6KVA	0.6KW	
SMS	Output					
Configuration		Voltage	Current	Apparent Power	Active Power	PF
	Line 1	225V	2A	0.4kVA	0.0KW	0.00
	Line 2	225V	1A	0.2kVA	0.0KW	0.00
	Line 3	225V	0A	0.0kVA	0.0KW	0.00
	Summary			0.6KVA	0.0KW	

Fig. 303. Analysis of system input and output voltages and power

11.3.2. “Modules” main menu option

The “Modules” main menu option enables you to see readings for an individual UPS module. To see the readings for a particular module, click on the correspondingly numbered image of the UPS module.



Fig. 304. Modules measurements and status display

11.3.3. “STSW” (Static Switch) main menu option

The “STSW” (Static Switch) option on the main menu displays the real-time voltage and frequency measurements for the inverter output voltage and the bypass voltage. This screen also displays a wealth of additional information about the status of the Static Switch, as can be seen in .

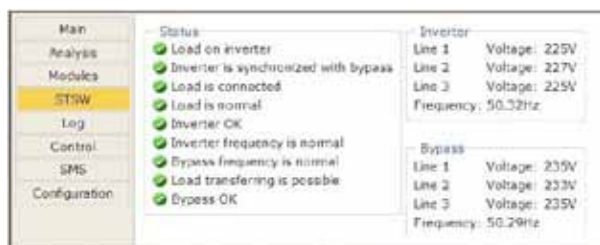


Fig. 305. Static Switch data and status display

11.3.4. “Log” main menu option



Fig. 306. Listing the log entries

MENU OPTION	DESCRIPTION
ID	This is simply a line number.
In / Out	“In” indicates the start of an alarm condition. “Out” indicates the end of an alarm condition.
Entry	Timestamp in the format dd/mm/yyyy hh/mm/ss
Alarm	Alarm code.
Description	Alarm message. See .
VDC	Battery voltage.

Table 15. Data items on the event log screen

LOG MESSAGES, IN ALPHABETICAL ORDER	ALARM NO.
“AC Input Failure”	22
“AC Input high”	21
“An alarm/s is vibrating”	6
“Battery Circuit Breaker is open”	25
“Communication lost”	0
“Communication lost”	32
“Emergency Power Off Activated”	14
“End of Backup”	11
“Equalizing mode”	15
“HIGH Battery voltage”	9
“Input Brownout”	20
“Last battery test”	16
“Last self test fail”	24
“Load current high”	29
“Load on BYPASS”	5
“Low Battery voltage”	12
“N.A.”	3
“N.A.”	4
“N.A.”	10
“No AC output to load” -	8
“One UPS module Warning!”	2
“Over temperature”	7
“Startup time-stamp”	31
“Static Switch Warning”	13
“STSW Not responding”	23
“Suspect a fault output stage”	27
“Suspect fault current sharing”	26
“UPS modules Warning!”	1
“UPS or more not responding”	30
“UPS Shut Down”	28
“User 1 input open”	17
“User 2 input open”	18
“User 3 input open”	19

Table 16. Alarm message text in Web interface log display. (Use the alarm number in this table to reference Table 11 for a fuller explanation of the alarm condition).

11.3.5. “Control” main menu option

The “Control” main menu option enables the user to initiate any of a number of UPS processes. The commands available are described in below.



Fig. 307. The “Control” main menu option screen

MENU OPTION	DESCRIPTION
Load on bypass	Transfers the load to the bypass voltage.
Load on inverter	Transfers the load to the inverter.
Start battery test	Initiates a battery test. Note: it is recommended that a battery test not be initiated when the when the UPS is operating near 100 % capacity and at the same time the battery is known to be not fully charged or not connected or otherwise faulty.
Abort battery test	Stop a battery test immediately.
LED test	The UPS beeps briefly and all of the LEDs on the control panel light up, to reveal any faulty LEDs.
Shutdown	Shuts down the UPS. Power will continue to be available to the loads from the bypass voltage.
Startup	Starts up the UPS when it is in an “OFF” condition.
Restart	When the UPS is “ON”, this command initiates a shutdown of the UPS followed by a startup.

Table 17. Commands available on the “Control” screen

At the bottom of the “Control” screen are two links:

- **Simulate UPS output source on battery:** clicking on this link simulates the conditions in effect during an ac power failure—a signal is sent via SNMP to any connected computers informing them of an ac power failure (in actuality, the load continues to be supplied from the inverter). If the computers are configured for automatic shutdown on ac power failure, they begin their shutdown countdown. This option is useful for testing the auto-shutdown configuration on a computer. The simulation can be ended by the user at will. If the countdown continues to completion, the designated shutdown targets (see section “Shutdown Targets”) will be shut down!
- **Simulate UPS battery status is low:** clicking on this link simulates the conditions in effect after an extended ac power failure—a signal is sent via SNMP to any connected computers informing them of a “low battery condition” (actually non-existent). If the computers are configured for automatic shutdown on low battery, they begin their shutdown countdown. This option is

useful for testing the auto-shutdown configuration on a computer. The simulation can be ended by the user at will.



Warning: The low-battery countdown is configured in seconds, so computer shutdown will occur relatively quickly.

11.3.6. “SMS” main menu option

On **SLC ADAPT** units equipped with the optional GSM cellular communications module, the “SMS” main menu option enables the controller to send an SMS message to any cellular telephone, and review all received or sent SMS messages. Messages are automatic; they cannot be created by the user.



Fig. 308. “SMS” screen

11.3.7. “Configuration” main menu option

Choosing the “Configuration” option on the Web interface’s main menu displays the Configuration (sub) menu. Through this menu, various important UPS settings can be modified. The options in the Configuration menu are described below.

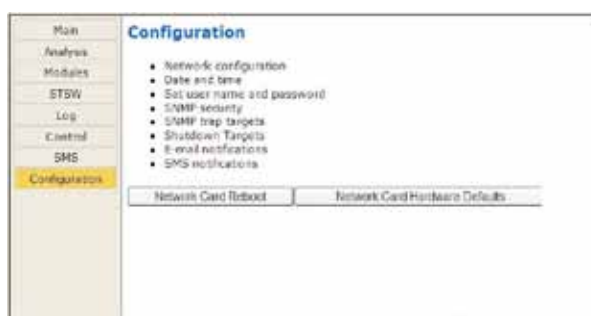


Fig. 309. Configuration menu

Selecting any of the options in the Configuration menu causes the Web interface to prompt for a user-ID and password. The factory default user-ID is admin, and the factory-default password is also admin. These default values for the user-ID and password can be changed, as is explained below in section “Set user name and password”.

After entering the correct user-ID and password and then pressing Enter, the requested screen is displayed.

The user-ID and password are only requested once per session, on the first entry into any of the Configuration menu options.



Warning: When an IP address or addresses are specified for a given community, only the specified addresses have access to the community. All other users will be shut out from the defined community.

11.3.7.1. Network configuration

The “Network configuration” option on the Configuration menu is equivalent to navigating to **Setup > Service > SC2012 > Network** on the **SLC ADAPT** physical control panel. Here you define the parameters needed to communicate with the **SLC ADAPT** over an intranet or over the Internet.

Consult your local network administrator for the proper IP address, subnet mask, and Gateway address.



Fig. 310. Configuring network communication parameters

11.3.7.2. “Date and time” – setting the calendar and clock

The “Date and time” option on the Configuration submenu is used to set the date and time of the **SLC ADAPT** internal calendar and clock. The date and time settings are important, for they are used to timestamp entries in the **SLC ADAPT** log.

The date and time are kept current by the **SLC ADAPT**, including when the system is in the “off” state.

Click the Back button to return to the Configuration menu.



Fig. 311. Setting the UPS internal date and time

11.3.7.3. Set user name and password

The “Set user name and password” on the Configuration submenu enables you to change the user-ID and password used for entry into the options on the Web interface’s Configuration submenu.

The factory default user-ID and password are admin and admin. The new user-ID and password must each have a minimum of four characters and up to a maximum of nine characters. If entered, the new user-ID and password are effective immediately.

Click the Back button to return to the Configuration submenu.



Fig. 312. Changing username and password of the Web interface

11.3.7.4. SNMP security

The SNMP security screen is where you define the SNMP communities that will have access to the **SLC ADAPT**, and whether that access will be “read only” (requests for data – a “read-only”) or “read-write” (includes the ability to modify G4 settings).

You also have the capability of limiting the IP addresses from which the G4 will accept SNMP packets. If the IP address has four segments of zero, this means that all users in the community will have the designated access.



Fig. 313. Define SNMP permissions

11.3.7.5. SNMP trap targets

An SNMP trap is a destination to which the G4 will send alarm notifications using the SNMP protocol. For each destination, an IP address and a port must be specified.

Fig. 314. Defining SNMP trap targets

11.3.7.6. Shutdown Targets

The “Shutdown Targets” option of the Configuration menu is where you record the IP address of the computers that you want to perform an orderly shutdown in the event of an ac mains power outage.

To use this option, the computer in question must have a Shutdown Agent installed on it. The Shutdown Agent is available from your vendor as a self-installing “setup.exe” file intended to be run on the target computer.

Note: The built-in Web interface supports a maximum of 15 shutdown targets. Customers requiring a larger number of shutdown targets should inquire about the PSM-AC for SLC **ADAPT** software product (see section).

Fig. 315. Define computers for auto-shutdown

FIELD	DESCRIPTION
Address	IP address of the computer to be automatically shut down in the event of a power failure.
Ac Fail delay (minutes)	Delay in minutes between ac failure and initiation of the automatic shutdown.
Low Battery delay (seconds)	Delay in seconds between low-battery alarm and initiation of the automatic shutdown.

Table 18. Defining computers for auto-shutdown

HOW AUTO-SHUTDOWN WORKS:

In the event of an ac power mains failure, the SLC **ADAPT** sends a notification to the IP addresses defined in the PC notification and shutdown screen. This generates a pop-up message on the computer screen advising of the ac fail condition, and starts a countdown. The countdown for each computer lasts for the number of minutes specified in the “Ac fail delay” field. If this countdown is exhausted before ac power returns, the Shutdown Agent saves and closes any open datasets on the computer and then shuts the computer down.

If during the countdown, the SLC **ADAPT** battery falls below a preset voltage (the low-battery voltage threshold, defined via the SLC **ADAPT** controller), the SLC **ADAPT** notifies the defined computers of the low-battery condition. This starts another countdown, that lasts for the number of seconds defined in the “Low battery delay” field and also cancels any other active shutdown countdown. When this latest countdown is exhausted, the Shutdown Agent saves and closes any open datasets on the computer and then shuts the computer down. This takes place even if the “Ac fail delay” countdown was not yet finished.

11.3.7.7. Defining email notification targets

The Web interface enables you to have notifications of system alarm conditions sent by email. To use this feature, the outgoing email server must be defined in the “E-mail notifications screen”, accessible from the Configuration menu.

Fig. 316. Defining email notification targets

FIELD	DESCRIPTION
SMTP server address	DNS name or IP address of the outgoing email server. The Power+ must be defined to the email server as NOT requiring a login.
SMTP port	Predefined SMTP port for the notification messages
Send as:	The “from” address in the outgoing email. Note: some email servers have an anti-spam feature that requires the “from” address to be a valid, existing address.
Recipients	In each line under the “Recipients” header, a single email address can be entered in standard format. For example: “PeterSmyth@networx.com” (without the quotes). A single email address representing a list of addresses can also be entered.

Table 19. Fields in the email notifications screen

11.3.7.8. Defining SMS notifications

The “SMS notifications” option of the configuration menu enables you to define telephone numbers that are to receive notification via SMS in the event of specific alarm conditions on the **SLC ADAPT**.



Fig. 317. Defining SMS recipients

FIELD	DESCRIPTION
Phone number	Specify the phone number to which the SMS notification will be sent. The notification includes an indication of the type of alarm.

Table 20. Fields in the SMS notification target definition screen

12. Optional

12.1. SNMP Agent

The SNMP agent is an optional, internal card which enables the user to monitor and control the **SLC ADAPT** system from a PC. The SNMP agent enables monitoring, management, control, and orderly shutdown of the UPS via the Internet protocol SNMP. The SNMP agent provides connectivity between the UPS and external UPS management software such as the **SLC ADAPT PSM-AC**.

During normal operation, the SNMP agent transmits information about present operating conditions: for example, input and output voltage, current, and frequency. In the event of a power outage, the SNMP agent can perform an automatic, orderly shut down of a computer system before the batteries of the back-up power system (UPS) run out. The SNMP agent also provides real-time notification of UPS events in several modalities: for example, via email or SMS.

Use of an SNMP agent disables the RS232 interface of the UPS.

The SNMP agent is intended for use with a UPS management software application such as **SLC ADAPT PSM-AC**, a sophisticated software suite for managing multiple power supply and UPS systems. The systems can be controlled both locally and from a remote location.

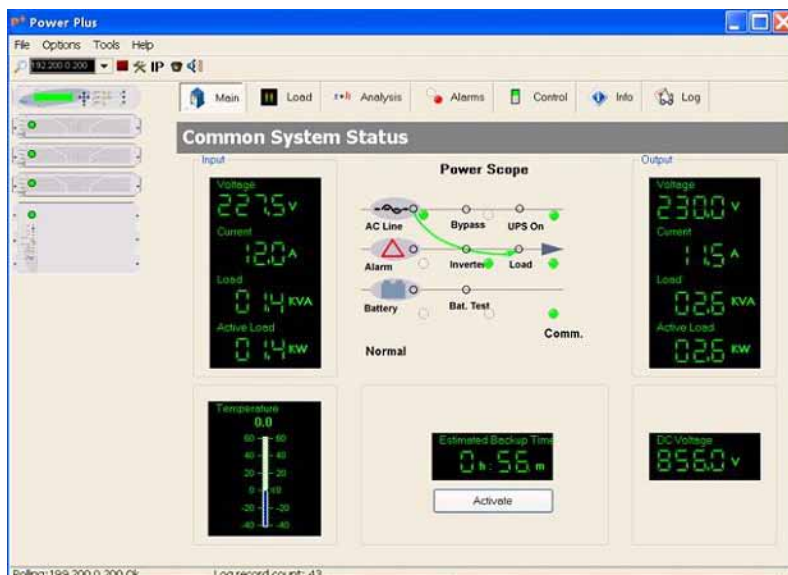


Fig. 318. **SLC ADAPT PSM-AC** lets you monitor and control your UPS

12.2. Wing: Wireless Control

The **SLC ADAPT** system includes an option for wireless control and management, using the Wing.

The **Wing** allows real-time detection of power system faults and immediately notifies selected recipients (control center, technician, etc.) detailing the faults.

The **Wing** consists of:

- Wing board.
- SIM board.
- Antenna.
- D9-D9 cable (for RS232 between the **SLC ADAPT** and the Wing).
- Dc power cable (banana plugs on both ends).

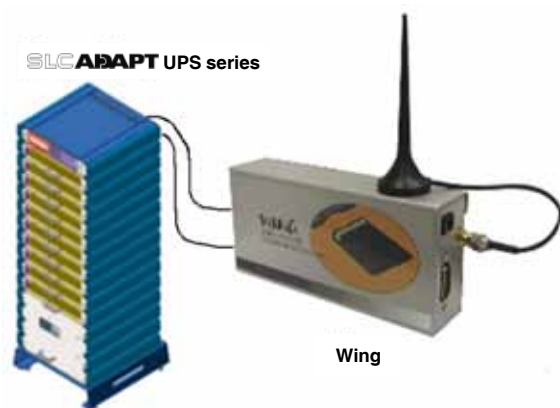


Fig. 319. A Wing unit connected to the **SLC ADAPT**

12.2.1. Installing the Wing

Note: The instructions in this section are for a Wing unit that has been ordered specifically for use with a **SLC ADAPT** system. If your Wing was ordered for use with another type of system, it does not contain the appropriate software for use with a **SLC ADAPT** system and you should contact your vendor if you wish to convert it for **SLC ADAPT** use.

To install a Wing unit for use with a **SLC ADAPT** system:

1. Take the Wing and press the button on the left side of the SIM slot to unlock the SIM cardholder; remove the SIM cardholder from the Wing.
2. Place your SIM card (which you obtained from your cellular service provider) in the SIM cardholder and slide the SIM cardholder gently and firmly back into the Wing.

3. Attach the supplied cellular antenna to the Wing.
4. Connect the Wing to the D9 socket labeled "Wing" on the left rear side of the controller using the supplied D9-D9 cable.

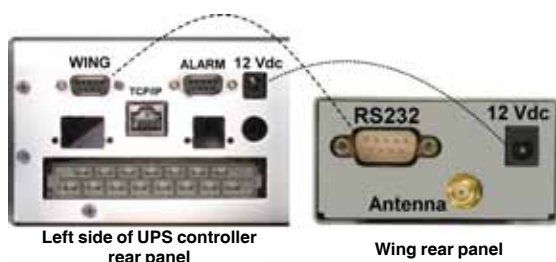


Fig. 320. Connections between the **SLC ADAPT** controller and the Wing

5. Connect the supplied power cable between the 12 Vdc socket on the left side of the controller rear panel and the Wing.
6. On a computer that is connected to the same network as the **SLC ADAPT**, open a web browser, type the IP address of the **SLC ADAPT** into the URL bar, and press Enter.

The home page of the **SLC ADAPT** web interface is displayed.

(If you do not know the **SLC ADAPT**'s IP address, you can see it by pressing and holding the *Esc* button for 2 or 3 seconds and then choosing "Network" on the displayed menu).

Verify that an antenna symbol resembling a trident appears in the lower left corner of the browser window. This indicates that the Wing has a cellular connection.

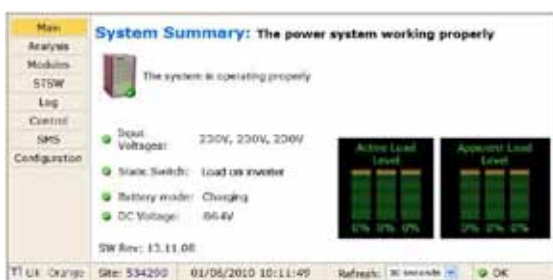


Fig. 321. Home screen of the **SLC ADAPT** web interface

7. From the Wing home page, navigate to **Configuration > SMS notifications**.
8. Enter the telephone numbers to which you want to have alarm notifications sent.
9. Commands and queries can be sent to the Wing from any cellular telephone.

To see a log of the incoming and outgoing SMS messages, choose SMS in the menu column at the left side of the web page.

To see a list of the available SMS commands, on the SMS screen select the "Available SMS commands" link at the bottom of the SMS notifications screen. The available SMS commands are also listed here in continuation.



Fig. 322. The SMS screen on the **SLC ADAPT** web interface

Command	Description
?	Commands are: ? Help Alarms Status Target Pass Reboot
Help	Commands are: ? Help Alarms Status Target Pass Reboot
Alarms	Get all active alarms
Status	Get the system real time values
Target	USAGE: target (index) (phone) (---) (password) Example: sms 1 +7123456789 admin
Pass	USAGE: pass (new password) (old password) Example: pass abcd admin
Reboot	Restart the system and network controller USAGE: reboot (password) Example: reboot admin

Table 21. List of SMS commands

13. Related Products

13.1. G4



Fig. 323. GMA4i G4

The G4 adds value to your **SLC ADAPT**:

- Option to connect external temperatures sensors.
- Input dry contacts available for on/off external sensors.
- Output dry contacts for control of external devices.
- Supports TCP/IP and SNMPv2.
- Controlled shutdown of servers on ac mains power failure, with user-defined time-delay. (*)
- Auto-wake-up of servers on restoration of ac power, after user-defined time-delay. (*),(**)
- Include internal GSM modem (quad-band) for an additional remote control and management link without LAN dependency.
- Bi-directional control via simple SMS commands.
- Automatic response to sensed events. For example, the G4 can be programmed to turn on an air conditioner when it senses that the room temperature has exceeded a user-defined level.
- Notifies designated targets of alarm conditions via email, SMS, and SNMP traps.
- Quick installation.

(*) Not all operating systems supported.

(**) Auto-wake-up requires "wake-on-LAN" BIOS feature on target computers. Not all operating systems supported.

Note: G4 requires disconnection of the **SLC ADAPT** internal network card. Consult your vendor before ordering.

13.2. G-Eye



Fig. 324. G-Eye

G-Eye adds value to your **SLC ADAPT**:

- Option to connect external temperatures sensors, humidity sensors, and frequency sensors.
- Inputs for ac/dc current and voltage measurements through various sensors.
- When the measured value moves outside a user-defined range, G-Eye immediately informs pre-selected targets of the alarm condition.
- One 4-20 mA input.
- Input dry contacts available for on/off external sensors.
- Output dry contacts for control of external devices.
- Supports TCP/IP and SNMPv2.
- Controlled shutdown of servers on ac mains power failure, with user-defined time-delay. (*)
- Auto-wake-up of servers on restoration of ac power, after user-defined time-delay. (*), (**)
- Include internal GSM modem (quad-band) for additional backup/control/management without LAN dependency.
- Bi-directional control via simple SMS commands.
- Automatic response to sensed events. For example, the G4 can be programmed to turn on an air conditioner when it senses that the room temperature has exceeded a user-defined level.
- Notifies designated targets of alarm conditions via email, SMS, and SNMP traps.
- Double power feed for reliability.
- Internal battery backup.
- Quick installation.

(*) Not all operating systems supported.

(**) Auto-wake-up requires "wake-on-LAN" BIOS feature on target computers. Not all operating systems supported.

Note: G-Eye requires disconnection of the **SLC ADAPT** internal network card. Consult your vendor before ordering.

14. Maintenance, warranty and service

14.1. Warranty conditions

The limited warranty only applies to those products that you acquire for commercial or industrial use in the normal development of your business.

14.1.1. Covered product

SLC **ADAPT** UPS series.

14.1.2. Warranty terms

Our company guarantees this product against any parts and/or labour defect for 12 months period from its commissioning by our personal staff or other specifically authorised, or 18 months from its factory delivery, whichever expires first. In case of failure of the product inside the warranty period, repairs to our facilities at no cost, the faulty part or parts. The transport expenses and packaging will be borne to the user.

Guarantee for period time higher than 10 years, the availability of parts and spare parts, as hardware as software, as well as a complete assistance regarding the reparations, components replacement and software updating.

14.1.3. Out of the scope of supply

Our company is not forced by the warranty if it appreciates that the defect in the product doesn't exist or it was caused by a wrong use, negligence, installation and/or inadequate testing, tentative of repairing or not authorized modification, or any other cause beyond the foreseen use, or by accident, fire, lightnings or other dangers. Neither it will cover, in any case, compensations for damages or injuries.

14.2. Available maintenance and service contracts

When the warranty is expired, has several maintenance modalities:

- **Preventive.** It guarantees a higher safety to preserve the correct operating of the equipments with a yearly preventive visit, in which the specialised technicians make several tests and sets in the systems:

- ☐ Check and write down the input and output voltages and currents per phase.
- ☐ Check the logged alarms.
- ☐ Check the readings of the LCD panel.
- ☐ Other measurements.
- ☐ Check the fan status.
- ☐ Check the load level.
- ☐ Check the selected language.
- ☐ Check the correct location of the equipment.

General cleaning of the equipment.

This way, it is guaranteed the perfect operating and the possible coming faults are avoided.

These supervisions are usually done without shut-down the equipment. In those cases that a shut-down were needed, a date and time would agree with the customer to do the task.

This maintenance modality covers, inside the working timetable, all the journey expenses and manpower.

- **Corrective.** When a fault occurs in the equipment operating, and previous notice to our Service and Technical Support (S.T.S.), in which a specialized technician will establish the failure scope and he will determine a first diagnostic, the corrective action starts.

The needed visits for its correct resolution are unlimited and they are included inside the maintenance modalities. This means that our technicians reviewed, in case of failure, will check the equipments as many time as it were needed.

Besides, inside these two modalities, is possible to fix the action timetable and response times in order to be adapted to the customer's needs:

- ☐ **LV8HLS.** Customer's attention from Monday to Friday from 9 h. to 18 h. Response time inside the same day or, as maximum, in the next 24 hours of the fault notification.
- ☐ **LS14HLS.** Customer's attention from Monday to Saturday from 6 h. to 20 h. Response time is inside the same day or, as maximum, at first time of the next working day.
- ☐ **LD24HLS.** Customer's attention from Monday to Sunday 24 h., 365 days per year. Response time in less than two or three hours after the fault notification.

- Additional arrangement: 1-m-cb.
 - ☐ **Index 1.** It means the number of Preventive visits per year. It includes displacement and manpower expenses inside the established timetable for each maintenance modality, as well as all the needed Correctives visits. Excluding all the parts and batteries in case of reparation.
 - ☐ **Index m.** It means to include all the parts.
 - ☐ **Index cb.** It means to include the batteries.

14.3. Technical service network

The covering, as national as international, of Service and Technical Support (S.T.S.) points, are made up by:

In Spain:

Andorra, Barcelona, Madrid, Bilbao, Gijon, A Coruña, Las Palmas de G.Canaria, Malaga, Murcia, Palma de Mallorca, San Sebastian, Santa Cruz de Tenerife, Seville, Taco (La Laguna - Tenerife), Valencia and Zaragoza.

At international level:

France, Brazil, Hungary, Portugal, Singapore, U.K., China, Mexico, Uruguay, Chile, Venezuela, Colombia, Argentina, Poland, Philippines, Malaysia, Pakistan, Morocco, Thailand, United Arab Emirates, Egypt, Australia and New Zealand.

15. General Characteristics

SUC ADAPT TECHNICAL DATA	
Topology	On line Battery, Double Conversion, VFI
Construction	Modular parallel hot-plugged modules
Operation	Continuous
Input	
Voltage	3 × 400 Vac + N (3 × 230 Vac + Neutral)
Voltage range	– 27 % and + 20 %
Current	3 × 15 A per module – no inrush current at startup
Frequency	47 Hz – 63 Hz
Power walk-in	> 60 sec.
Power Factor	0.99
THDI	5 %
Output	
Rated Power	10 kVA / 8 kW ÷ 100 kVA / 80 kW
Frequency (in free-running mode)	50/60 Hz ± 0,1%
Freq. tracking range	± 1 Hz, ± 2 Hz, ± 3 Hz (selectable)
Slew rate	1 Hz/sec.
Voltage	3 × 400 Vac + N (3 × 230 Vac + Neutral)
Static Regulation	± 1%
Regulation for unbalanced load	± 1% for 100% unbalanced load
Dynamic response to 100% load step	± 2%
Overload	110% for 10 min., 125% for 60 sec., 1000% for 1 cycle
Waveform	Sinusoidal
THD	Less than 2% for lineal load
Load CF (max.)	6:1
AC-AC efficiency (nom.)	Up to 96% at full load
DC-AC efficiency (nom.)	Up to 98% at full load
Batteries	
DC-Link voltage (V)	± 340 a ± 425 Vdc
Quantity	64 x 12 Vdc
Type	Sealed, lead acid, rechargeable
General	
Maximum power dissipation (Po=8 kW)	N*333 W (N*1136 BTU), N = # modules
Ambient temperature:	
Operating:	-10 ÷ +40 °C
Storage:	-20 ÷ +60 °C
Relative humidity	Up to 95%, non-condensing
Acoustic noise	48 ÷ 58 dBA with the 50% of the load 51 ÷ 61 dBA full load
Altitude	1500 m. without derating
Enclosure	IP20
Cooling system	Multi-fan with speed control (forced)

SUC ADAPT TECHNICAL DATA	
Standards	
EMC	EN50091-2 Class A; IEC 62040-2 Class A
Design	EN50091-3; IEC 62040-3
Safety	EN50091-1; IEC 62040-1-1
Low magnetic field radiation	EMF as per ICNIRP

Table 22. Specifications

SYSTEM CONTROLLER – TECHNICAL DATA	
Micro Controller core	16 bit
Display	4 × 40 characters LCD with backlight
Other indicators	8 LEDs, buzzer
Analog input channels	4
Digital input channels	8
Real Time Clock (RTC)	Yes, with backup
Power meter	kVA, kW, PF
Volt-free outputs (dry contacts)	6 outputs, rated 50 Vdc / 1 A
RS232 user port	Yes, isolated
Optional communication	TCP/IP, GPRS/SMS Wireless communications(Optional)
Communications with system modules	Serial, isolated
Events log	255 events
System operation without controller	Unchanged
On-screen parameters	<ul style="list-style-type: none"> - Load bar-graph - 3-phase voltages - 3-phase currents - Battery voltage - Status of each UPS module - Static-switch parameters and status - Battery sensor temperature
Alarms	<ul style="list-style-type: none"> - AC failure - DC failure - UPS module(s) failure - Load on bypass - Battery test failure - Over/under temperature - Overload (Contacts rated max. 48 Vdc 1 A)
RTC operation without power	2 weeks
Power requirements	3 × 400 Vac / ± 425 Vdc 15 W

Table 23. Control system specifications

All specifications are subject to change without notice.

SALICRU

Avda. de la Serra, 100
08460 Palautordera
BARCELONA
Tel. +34 93 848 24 00
902 48 24 00
Fax. +34 94 848 11 51
comercial@salicru.com
Tel. (S.T.S.) 902 48 24 01
Fax. (S.T.S.) +34 848 22 05
sst@salicru.com
SALICRU.COM

BRANCHES AND SERVICES and TECHNICAL SUPPORT (S.T.S.....)

MADRID	MURCIA
BARCELONA	PALMA DE MALLORCA
BILBAO	PAMPLONA
GIJÓN	SAN SEBASTIAN
LA CORUÑA	SEVILLA
LAS PALMAS DE G.	VALENCIA
CANARIA	VALLADOLID
MÁLAGA	ZARAGOZA

SUBSIDIARIES

FRANCE	CHINA
PORTUGAL	SINGAPORE
HUNGARY	MEXICO
UNITED KINGDOM	

REST of WORLD

GERMANY	PERU
BELGIUM	URUGUAY
DENMARK	VENEZUELA
HOLLAND	SAUDI ARABIA
IRELAND	ALGERIA
NORWAY	EGYPT
POLAND	JORDAN
CZECH REPUBLIC	KUWAIT
RUSSIA	MOROCCO
SWEDEN	TUNISIA
SWITZERLAND	KAZAKHSTAN
UKRAINE	PAKISTAN
ARGENTINA	UEA
BRAZIL	PHILIPPINES
CHILE	INDONESIA
COLOMBIA	MALAYSIA
CUBA	THAILAND
ECUADOR	VIETNAM

Product Range

Uninterruptible Power Supply UPS
Lighting Flow Dimmer-Stabilizers
Power Supplies
Static Inverters
Photovoltaic Inverters
Microturbines
Voltage Stabilisers

